Welcome to the final installment of the best diet series. If you missed them, read part I and part II before moving onto this part. In this part, I will lay out the most important factors when considering which ‘diet’ to undergo.

WHAT A SUCCESSFUL DIET REALLY MEANS

As you should know by now, there is no such thing as a ‘perfect’ diet. Not a single eating plan can possibly cover all of the possibilities and preferences of each person. On the other hand, there may be a ‘perfect’ diet for you at a certain time in your life/career. The key is to make sure it works for as long as you want it to. Of course, you will know if a diet works for you based on physiological and psychological assessments. Once you reach a goal, it will be time to either re-evaluate whether you should stick to the said diet or move on to bigger things.

To move towards finding the right eating plan for you there are a few general caveats to know if you want to to translate what the mountain of research has come up with. Each of the below points should be considered guiding principles when evaluating whether you would have success on a specific diet.

1. It’s healthful. In other words, a good diet will make you look at what you’re eating. Remember the Twinkie Diet above? If your main goal is weight-loss, you can eat 800 calories of junk food per day and lose weight. In the respect, it works. However, it’s not enough to just control calories anymore. You can lose weight eating Twinkies all day, but how sustainable is that for your health? Diet quality matters, especially if you want to promote health and keep off any weight you lost.

2. It’s individualized. A good diet should take into consideration your metabolic condition and lifestyle. In other words, a good diet should take into consideration your diabetes or high-level athletics. Diets should not be cookie-cutter. There is no such thing as a one-size fits all diet, although there may be slight variations between you and the next person. If you’re diabetic, it would make very little sense to eat the same way as a healthy, lean, and active person. Additionally, what type of activity are you doing? Are you an endurance runner, a weight-lifter, a sprinter, a dancer, or a coach potato? Certain sports necessitate more or less of nutrients for optimal performance.
3. **It's fulfilling.** A good diet should fulfill your body's requirements for protein, fats, and carbohydrates without overfeeding you (unless your goal is to become a larger version). By keeping in mind that proteins and fats are more satiating than carbohydrates, you can then construct a weight-loss plan that can control hunger better while improving nutrient intake. In fact, carbohydrates are not technically necessary since the body can create it through an indigenous process, but it's fulfilling because carbohydrates are required to **optimize** metabolic function and hedonism. And if you're an athlete, carbohydrates are indispensable for optimal performance and body composition.

4. **It's sustainable.** Research shows that over 90% of people **cannot** stick to a diet for more than two years. I surmise this is probably because most people don't know how to choose what diet is best for them and how to adjust a diet based on their preferences. Not knowing how to transition explains in large part why high-level athletes become fat and sick once they become working members of society. This is also a huge problem for high-school athletes going into college — ever heard of the Freshman-15? If Michael Phelps were to stop swimming but maintained his monstrous in-season training caloric intake, his ability to float would surpass his ability to swim in the blink of an Olympic second.

This last point is especially important in light of health-promoting diets. If you can't stick to a diet, then it's no good. If you go on a diet and lose 10% of your excess fat mass but gain it all back in two years, you're no better at the finish than you were at the start. Think Biggest Loser. Somewhere there are reports of the contestants developing eating disorders and tipping the scales even more than when they started the show.

Having the "best" diet yet not sticking to it is like having a Bentley collecting dust in your garage. It's nice to talk about and show people you have this "awesome" thing you can always turn to, but if you're not going to use it to make yourself a better person, then it's useless.

Please, don't let this car collect dust. **Source**
Mediterranean, Paleo, vegan, Weight Watchers, low-carbohydrate, DASH, or any of the other slick Amazon best-sellers will help you become healthier and leaner. But underneath the veil of the fancy names and acronyms, most successful diets have the above things in common.

SO AGAIN, WHAT IS THE BEST DIET? USE THIS ANSWER.

“It depends—whatever is working right now for whatever goals I have, and I should be able to stick to it”. It all boils down to context-dependent effectiveness and preference. Anything outside of that is just minor detail.

The answer probably is not as pretty as a dozen roses, but it’s the truth. You can force-feed yourself a diet you don’t like to lose the extra fat on your left eyelid, but what happens after you meet your goal? Are you going to stick to the diet? Do you know how to eat afterward? Do you know how to eat if you have a medical condition? Do these questions seem like a bunch of pester to you compared to what you should Tweet or tag on Facebook? Making dietary changes is a lifelong process, but it’s one that brings highly coveted awards. Stick with it.

As always I appreciate feedback, comments, and input. What is your perception of a good diet?

NUTRITION

THE BEST DIET PART II

MARCH 5, 2015 | LEAVE A COMMENT

This is part two of a three part series on what the best diet is. In part I, I briefly went over the major dietary variants found in research and rattled off some of the research in support of them. Despite each diet having their own set of benefits—with many overlapping each other—they’re all running for ‘best diet candidacy’. In this part, I will go over a few general factors that determine whether one diet will work better than another.

THE OMNIPOTENT CONNECTION—LIFESTYLE AND PREFERENCES

I hope all of this is connecting. If each diet has the potential to be the best, then it doesn’t matter which diet you’re on, right? That’s half true. In each study, you will have people who do not respond as well as others, because of... individual differences. Results of studies are averages and do not explain in full why some people saw better results than others. If that is the case, then it might be better for you to look at these studies, figure out which diet may suit your condition better, and experiment. That is probably the way to go. To boot, there are very smart doctors and researchers who also agree that the best diet for you is the one that fits your lifestyle and metabolic condition.
Indeed, large-scale experimental, observational, and free-living studies have been conducted comparing diets with differing macronutrients to each other. Although many of the studies above show that one diet may be superior to another, there also exists research showing that differing macronutrient composition may not matter depending on the situation. One such situation is weight-loss. In light of this statement, it is sound logic to re-consider the previous theory if there is a refuting scientific result.

Back in 2007, Gardner et al published a study that would send ripples through the wide ocean of diet research. They showed that the Atkins (low-carbohydrate) diet resulted in more weight loss and more favorable blood lipids than the Ornish (vegetarian, low-fat), ZONE (balanced, mixed), or LEARN (lifestyle-based, low-fat, mixed) diets. Even at 12 months, the Atkins diet held steady. Two elephants in the room here: 1) mean weight loss between Atkins and the second best diet was 4 pounds (not a whole lot in the grand scheme of things); and 2) at two years, participants in each of the four groups saw non-statistically significant differences. In other words, the Atkins diet was no longer more effective than the other three diets at two years (Gardner, 2007). What does this tell us?

**Sustainability is the ultimate trump card. It’s the deciding factor between “(weight) losers” and losers. And it’s also the one thing that will keep the results coming like rain during monsoon season in Thailand. It can be what makes any diet the best.**

One of the most cited studies comparing of the effects of different diets on weight loss was published in the *New England Journal of Medicine* in 2009. They concluded:

“Reduced-calorie diets result in clinically meaningful weight loss regardless of which macronutrients they emphasize.” (Sacks, 2009)

Here is another study from the well-known and respected *Journal of the American Medical Association*. The authors summed up their findings as such:

“Significant weight loss was observed with any low-carbohydrate or low-fat diet. Weight loss differences between individual named diets were small. This supports the practice of recommending any diet that a patient will adhere to in order to lose weight.” (Johnston, 2014)

And in another study published in *PLoS One*, Naude et al concluded that:
“Trials show weight loss in the short-term irrespective of whether the diet is low CHO or balanced. There is probably little or no difference in weight loss and changes in cardiovascular risk factors up to two years of follow-up when overweight and obese adults, with or without type 2 diabetes, are randomised to low CHO diets and isoenergetic balanced weight loss diets.” (Naude, 2014)

Finally, Foreyt et al put their conclusion rather nicely:

“Although “a calorie is a calorie” under the controlled conditions of a metabolic unit (i.e., only the level of calorie intake matters and not the source of calories), we conclude that these interrelationships are far more complex in the free-living situation. The different diet-related factors that condition energy balance, including total energy intake, satiety and hunger sensory triggers, and palatability, must be considered when assessing the efficacy of weight-reducing diets of different macronutrient composition.” (Foreyt, 2009)

In terms of weight-loss, the evidence is stacking in favor of a simple message: as long as you stick to a reduced-energy, weight-loss focused diet where you won’t feel like killing yourself, the dietary composition of carbohydrate, protein, or fat really don’t matter.

The above bolded statement literally means you can eat Twinkies all day and lose weight as long as you’re in a calorie deficit. But let’s get a couple of things straight, it doesn’t take a nutrition researcher to know that this won’t do any favors for your health. And if your health begins to decline, then losing weight is nothing but an afterthought in the wake of suboptimal performance in daily life, metabolism decline, and horrible quality of life.

What applies to weight-loss also applies to other goals. Subjects in these weight-loss studies volunteered and signed up because their goal was probably to lose weight. What about if you want to gain weight? Same story here—to gain weight, you must be in a caloric surplus regardless of macronutrient composition. For the purpose of this post, this is as simple as it gets.

What about performance? Simply put, it probably doesn’t matter, either... at least not until you become an elite athlete. At that point, you will probably have to fine tune things. No one has done a case study on him, but I highly doubt Michael Phelps eats like a normal person.
human being. He probably eats like ten normal human beings.

After all, eating food does not just serve to keep you alive, but also to make you thrive. Don't put low-octane gas into a high-octane car.

THE METABOLIC CONDITION CONNECTION

On the other hand, this may not apply if you have a certain medical condition that precludes the weight-loss. Like lifestyle preferences, metabolic, or medical, conditions are something that must be heavily considered when following a diet. Food can be an awfully powerful drug that if abused can lead to undesirable consequences. This is why Hippocrates, the founder of Western medicine, said,

For instance, your risk of becoming diabetic is increased exponentially if you’re obese, and as much as losing weight greatly benefits diabetes management, the effectiveness of the diet can be determined by the macronutrient content. In the particular case of diabetes, losing weight is extremely helpful, but research on this front shows that low-carbohydrate diets outperform all others consistently in terms of glycemic control and lead to better weight loss than low-fat diets because of that glycemic control. Additionally, Feinman et al showed in their massive review that lower-carbohydrate diets are the most effective in terms of rates of diabetes remission and cessation of diabetes medications (Feinman, 2015).

There are other medical conditions that are affected by nutritional modulation. Non-alcoholic fatty liver disease, cardiovascular disease—high triglycerides, hypertension, suboptimal cholesterol levels—renal disease, and inflammatory bowel diseases represent just a small handful of disorders that is influenced by nutrition. Undertaking medical nutrition therapy on your own is ill-advised, so seeking out the help of someone who is licensed to proctor this type of stuff to tailor an eating plan based on lifestyle preferences, goals, and medical conditions is the best bet.

Stay tuned for the next and final installment of this series.

As always, I value your opinion. What kind of diet best suits you? How long have you been on your favorite diet?
You make more than 200 decisions in a day—which phone to buy, where to go for vacation, who to date. Obviously these are questions that require tons of deliberation. The general quality of your life is often determined by questions that seemingly have little significance but carry a huge consequence. How about another question that we always ask ourselves, one that has the capability to have an enormous impact or none at all?

“What is the best diet?”

Of the hundreds of decisions you make per day, approximately 226 decisions will be about food (Wansink). Due to the propensity of food decisions in your daily lives, it goes to say that such a question is riddled with endless loopholes, criticism, lies, and truth. It’s talked about so commonly that you can just shrug it off, but the importance is scarily deceiving. Most importantly, the significance of this question lies within the context of the person asking it, because certainly, the idea that a perfect diet exists to fit everyone’s wants and needs may be nothing but a false truth.

And if you work in a field that is intricately involved with human health, disease, and nutrition—like a Registered Dietitian (RD)—it’s the worst possible question. Dealing with a question that is entangled in a web of this and that is difficult enough to write in a blog post, imagine trying to explain it to a person who has no clue. RDs deal with not luxuries people think about once every few years like buying a house or car, but a commodity, and their responses directly affect those 226 daily food decisions people make. And because this question has been asked so many times and approached in so many different ways, the significance of it is slowly beginning to lose out to the myriad of options available in the mainstream.

Wrapped up nicely with the “what is the best diet” are a couple of other multi-faceted questions that you probably want answers for sooner than your birthday.

“What are the best foods to eat?”

“What’s the best way to do [insert goal here]?”

So on and so forth. The best diet would be the best present ever. Although it makes sense that there is no one best diet and no one
best food, these questions cannot be proven through science. If it could, then scientists would still not be spending hundreds of man hours and thousands of research grant dollars trying to figure out what the optimal diet is. Fortunately, science does shed light on the path you should take to achieve good health through diet.

For your next birthday. Source

THE MAZE OF DIETS

Follow any large media outlet and you’ll be sure to read, hear, or smell reports and journalists talking about whether you should “slash carbs to carve a sleek and sexy six-pack” or “drop pounds by dropping fat” or “eat like a caveman and look like one” (uh, do you actually want to look like this?). So much conflicting information, so little time—who to listen to?

It’s the grass-fed, organic, free-range, non-GMO, pastured limestone that helps him maintain perfect white teeth (source)

Outside of the lab, many camps have laid claim to a best diet, but no one seems to agree with each other fully. One study will come out today that refutes yesterday’s study on the same diet. On the vast intranet, you have various nutrition experts and armchair gurus going to war on their keyboards espousing their preferred diet without tickling the thought that their diet may not actually be the best. The devil is in the details, so asking a layperson to read a full article and understand the meaning of those details is like asking a dolphin to walk on land—it’s not going to happen. That’s why there’s the media to help, except they really don’t. Your best bet is to look for someone who actually reads and keeps up with the literature—say a doctor or an RD. Luckily, I do enjoy a good read and turning the knowledge of science into application is a passion of mine. Very basically, let me answer the almighty question, “which is the best diet”. And it is... <drum roll>

The Mediterranean diet.
A low-carbohydrate diet.

A vegetarian (or vegan) diet.

The Dietary Approaches to Stop Hypertension (DASH) program.

The Paleo diet.

Weight Watchers

... Hold the phone! Didn’t I just say that I would tell you what the best diet is? Why, yes, I did, and I did. I know that best is a term to denote a singular thing that is superior to all others in its respective category, but read on to find out why everything can be the best.

LET THE RESEARCH SPEAK

The topic of what diet is best is probably one of the hottest in nutrition research and a new study (and book) is published just as quickly as a baby is born. According to the research, it’s fine to contradict myself. Why? Because each diet is the best. Before we move onto why each diet can be the best, let’s look at very briefly what some of the recent research actually has to say in favor of the major dietary regimes and their spin-offs:

**The Mediterranean Diet**—one of the “children” from a combination of research and observation, the Mediterranean diet seeks to reflect the dietary habits of some of the healthiest people in the world. Unlike most dietary programs, the Mediterranean diet is one of the few scientifically studied that attempts to mimic what is actually consumed in observation. Specifically, the Mediterranean diet emphasizes fish, nuts, legumes, fruits, vegetables, and low glycemic carbohydrate sources. In the literature, a Mediterranean diet is similar to a moderate carbohydrate diet, about 40%. Some benefits:

- Increased life span (Crous-Bou, 2014)
- Decreased weight and obesity (Sayon-Orea, 2014; Huo 2014; Thomas 2007)
- Improved non-alcoholic fatty liver disease (Zivkovic, 2007)
- Improved hemoglobin A1c and other diabetes markers (Carter, 2014; Huo, 2014; Esposito, 2014)
- Improved blood lipid panel (Huo, 2014; Richard 2014; Thomas,
Low-carbohydrate diet—popularized mainstream by Robert Atkins, MD, this dietary protocol has really been in practice throughout mankind’s history. There are various societies that consume low daily carbohydrates, such as the Inuits. Because of carbohydrate’s ability to affect various health markers such as blood sugars, it is being more commonly manipulated, and with good results. Low carbohydrate diets can be characterized in the literature as anything under 40% and as low as 5% of total calories.

- Improved satiety (Gibson, 2015; Erlanson-Albertsson, 2005)
- Significant weight loss, even against FDA approved weight loss drugs (Yancy 2010; Yancy, 2004; Sharman, 2004; Bertoli, 2014; Tay 2008)
- Improved blood lipid panels, especially in those with high triglycerides (Yancy, 2004; Thomson, 2010; Sharman 2004; Volek, 2008)
- Improved diabetes markers, especially in those with compromised insulin sensitivity (Samaha, 2007; Feinman, 2015; Arora, 2005)
- Decreased inflammation and tumor growth (especially in response to ketogenic diets)(Ho, 2014; Klement, 2011)

Low-fat diets—programs such as Dietary Approach to Stop Hypertension are those purported to improve blood lipids under the premise that saturated fat and cholesterol increase risk of heart disease and blood pressure. There is extensive evidence that free-living populations do follow a somewhat lower-fat diet and this can also include those who are vegetarian. Asian populations typically consume a diet lower in fat, for example. Fat content is usually below 30% and carbohydrates are higher, above 50%.

- Decreased weight and obesity (Astrup, 2000; Astrup 2002; Hooper, 2012; Mueller-Cunningham, 2003; Tay, 2008)
- Improved diabetes markers (Yokoyama, 2014)
- Improved cardiovascular health, such as blood pressure and blood lipids (Yokoyama, 2014; Shridhar, 2014; Famodu, 1998; Nosova, 2015)
- Improved inflammatory markers (Turner-McGrievy, 2014; Egert, 2014)
- Improved non-alcoholic fatty liver disease (Ma, 2015)
- Decreased risk of certain cancers (Fung, 2010)

Paleolithic diets—the attempt to emulate how our hunter-gatherer ancestors ate. “Paleo” diets have gained an immense surge of popularity since the late 1970’s when a seminal paper was produced citing anthropological data that our hunter-gatherer ancestors ate quite differently than how we are currently eating. Supporters of this program propose that by eating lean meats, vegetables, fruits, nuts, and seeds, and excluding dairy, legumes, wheat, and grains, we will see a boost in our health and performance because we will be eating concomitantly with our genetic makeup. Research does not give a clear macronutrient breakdown of a paleo diet, only that the program fits within the framework of the paleo principles mentioned above.
• Improves weight loss and obesity (Boers, 2014; Mellberg, 2014)
• Improves satiety (Jonsson, 2013; Jonsson, 2010)
• Decreases risk of certain cancers (Whalen, 2014)
• Improves cardiovascular risk factors (Jonsson, 2009; Klonoff, 2009)
• Improves diabetes markers (Frassetto, 2009; Klonoff, 2009)
• Improves metabolic syndrome characteristics (Boers, 2014; Lindeberg, 2012)

“THE RESEARCH HAS SPOKEN... AND I'M STILL CONFUSED”

The above is just a small handful of proposed health benefits of each diet. There are seriously hundreds of thousands of studies on each diet and their derivatives; it’s no wonder the average person has no clue where to start when it comes to which diet they should follow. I also refrained from going into the demerits of each diet because I do not want this post to be the length of half a book. Despite the small list, do you see a pattern? Here is the bottom line and the answer you have been waiting for:

Any diet will work. Any diet has the potential to be the “best diet”. And not surprisingly, each eating pattern overlaps with one another in some aspect of health, whether it’s improving diabetes, cardiovascular disease, or weight. The researchers in each study were looking at a particular end point, because frankly, it will be nearly impossible to study how each food affects each health biomarker, especially in context of individual differences. Nonetheless, each diet possessed the ability to improve health to a statistically significant degree.

Stay tuned to read how to connect the ‘best’ diet to your situation.

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Time to tackle another head of what I consider the 3-headed beast of nutrition: carbohydrates. Especially in the field of dietetics and nutrition, there is a pseudo-war about whether clients should restrict carbohydrates to see health benefits. And I swear, after this post, I will not be posting monster 3,000 + word posts again.

Every other month, there is a study that either touts or refutes the benefits of either carbohydrate restriction or carbohydrate liberation. Who’s wrong, who’s right?

First, I want to tell you what the other two heads are:

1) Saturated fat and cholesterol
2) Salt

And today, we are going to talk about carbohydrates.

**What are carbohydrates (carbs)?**

Carbohydrates are energy nutrients, just like protein and fat. They provide the body with substrates to keep it functioning optimally. We are not going to talk about biochemistry here, such as which processes that involved in carbohydrate metabolism, where carbohydrates get absorbed, and the finer details of what happens to carbohydrates after they do get absorbed.

Carbohydrates are made up of three elements: carbon, hydrogen, and oxygen. Through a complex metabolic process, carbohydrate sources like bread, potatoes, and fruit are eaten and subsequently broken down into three simple sugar molecules: fructose, glucose, and galactose. They are the preferred energy source for red blood, brain, and muscle cells, especially during periods of high-intense activities. Carbs are stored in two primary tissues of the body: liver and muscle. The storage capacity of carbs in the liver is ~100g in average humans and 300-500 in muscle, for an average of 400-600g of storage capacity in an average person at any time (Acheson; Jensen).
Carbohydrates in and of themselves are not evil—far from it. Carbohydrates stimulate the release of insulin, which is an anabolic—building—hormone. Don’t know what insulin is because you’ve been living under a rock? It’s a hormone that acts on your body cells, opening them up like a key and lock, in order to remove sugar from the blood caused by eating carbohydrates. Insulin is a requirement if you want to build muscle. Insulin is also anti-inflammatory, meaning that some carbohydrates are actually required for proper immune function (Hyun).

Whether or not carbohydrates are necessary is something that experts like to debate about. This is where things can get a bit tricky. Notice how I said “preferred”. Some experts like to take it further and suggest that carbohydrates are either not necessary for survival or that you should eat a high-carbohydrate diet.

**What is ‘low’?**

Let me just say this: **twerking is a menace to our society.**

When you look at the research, it’s clear that ‘low-carbohydrate’ does not have a uniform definition. For example, studies done by Volek et al use low-carbohydrate plans that consist of less than 20g of carbohydrates per day. These are also called ‘ketogenic’ diets. Other researchers consider 40% of daily carbohydrate intake low, or 60g or less per day, or 130g or less per day (this 130g figure comes from the idea that the brain requires about 130g of glucose per day to function).

Then you have studies that predominantly use either percentages or absolute numbers. Some studies may use 40% as an arbitrary number for low-carb diets, but researchers of low-carb studies claim that 40% is too high. Whatever the case may be, a low-carb can safely be defined as having an intake of 50-100g. I prefer to use absolute numbers instead of percentages since they give you more solid guidelines. For example, if you used percentages, you would get different numbers depending on how many calories one eats.

For the sake of discussion, let’s say you want to get into a ketogenic state by eating 50g of carbs per day.

If you were a 2000-calorie diet, 10% would be 50g of carbs (50 * 4 = 200 kcals; 2000/200 = 10%)

But if you were on a 4000-calorie diet, 10% would be 100g of carbs, enough to knock you out of ketosis.
Instead, you can just say you want to eat 50g of carbs, regardless of what your calorie intake may be to get into ketosis.

**Breakdown of carbohydrate intake:**

- 0% or 0: no carb
- 20-50g: very-low carb (if high-fat, this is considered a ketogenic diet)
- 50-75g: low carb
- 75-150: moderate carb
- 150-225: moderate to high carb
- 225+: high carb

Before we move on, let me make clear that I am a fan of lower-carbohydrate intakes. But what I mean by lower is that my plans are lower than what public health agencies and authorities suggest. The United States Department of Agriculture (USDA) nutrition guidelines suggest up to 45-65% of daily calories to be in the form of carbohydrates. Of course, this highly depends on the individual, but suffice it to say that a vast majority of people would benefit from a lower carb intake than what they’re currently eating.

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**Source**

**Benefits of lower-carb plans**

This part is going to be short. I cannot help but be a bit biased toward carb intake on the lower side, and as such I realize that there are more benefits to lower-carb diets than consequences for a vast majority of people. When I refer to lower-carbs, I mean anything under 45%, which is the minimal that health authorities recommend.

In the literature, lower-carb plans have been shown to:

- Improve fat-loss at a quicker rate than low-fat/high-carb diets (Shai; Yancy; Gow; Gardner)
  - Some studies show that low-carb diets induce almost double the amount of weight loss as high-carb diets in the same time frame
- Retention of lean body mass (muscle) better than conventional diets (Volek, 2002; Volek 2004; Miyashita)
- Decrease risk factors and improve health biomarkers of certain cancers (Sedlacek; Ho)
- Improve blood levels of inflammatory markers and endothelial/vascular function (Rajaje; Mah)
- Improve insulin sensitivity (Blouet; Volek) and decreases levels of circulating insulin, which reduces risk of diabetes (Kodama; Demol)
- Improve lipid profile (LDL, HDL, TG, total cholesterol ratio) thereby improving Metabolic Syndrome risk factors (Hu; LeCheminant; Sharman) compared to high-carb diets, which worsen diabetic complications and cardiovascular risk (Chen)
- Superior glycaemic control compared to a low-fat/high-carb diet (Guldbrand)
- More favorable impact on low-grade (chronic) inflammation compared to a low-fat diet (Jonasson)
Improves levels of leptin, which is considered the fat-burning hormone (Llanos)
• In terms of athletic performance, too high of carb (above 5g per pound of bodyweight) intakes do not seem to confer additional benefits compared to moderate carb intake (Sherman)
• Naturally lowers overall daily caloric intake by improving satiety (Wycherley; Bravata)

The last point is probably the most important point in this whole low-carb paradigm. Although many studies show that low-carb diets reduce weight, over half of them actually admitted that subjects lost more weight because they ate less due to satiety, which leads to less food intake. Translation: lower total calorie intake.

When talking about low-carbohydrate diets, you can’t ignore the impact that carbohydrates have on athletic performance. Most of the literature shows, without a shadow of a doubt, that high-carb diets outperform low-carb diets when it comes to athletic performance. But in the past ten years or so, low-carb gurus such as Mark Sisson, Robb Wolff, Stephen Phinney, and Jeff Volek have been proposing that a low-carb diet with high fat not only as effective as higher carb plans, but they also improve longevity, health, and body composition. If you need proof, look no further than some elite level athletes:

• Professional cyclist, Dave Zabriskie
• Ultramarathon runner, Timothy Olson
• Triathlete Simon Whitfield
• Winter Olympics pursuit event winner, Bjoern Ferry

Compared to high-carb plan athletes, low-carb athletes are much fewer in numbers. Whether their success is due to their diet or their insane genetics and training routine is still up for debate. One thing for sure is that low-carb diets DO work for some elite level athletes.

People who may benefit from low-carb plans:

• Sedentary to moderately active people
• Those with Metabolic Syndrome (overweight or obese; high lipids; impaired insulin sensitivity; high fasting blood sugars; high blood pressure)
• Those with a history of high-carb plans
• Those who are pre-contest (need to decrease carbs to improve appearance)

*** A little aside about fructose

Fructose, which is the sugar found in abundance in fruits, is primarily metabolized in the liver. The enzyme which catalyzes fructose metabolism is made in the liver. People say that fructose is an unnecessary component of an eating plan. Sure, it may be unnecessary... if you want to live like a zombie. Fructose is preferentially converted to glycogen in the liver so it can be used later, namely to keep your blood sugars under control. When you’re low-carbin’ it, this is important. Additionally, fructose is more efficient at supplying a constant stream of sugar to working muscles during exercise (Rizakalla).
After you eat fructose, it gets shuttled to the liver for processing. Unlike fructose, glucose and galactose act quicker, 30-45 minutes after ingestion. This is why all the holy Godmothers praise fructose as the next sweet savior, since it doesn’t increase blood sugar and keeps insulin levels down. Agave nectar, anyone? Now a low-carb plan will naturally dictate a decrease in fructose consumption because it decreases overall carbohydrate sources. Why is fructose consumption an important topic?

On average, the liver can only process 50g of fructose per day (Sun). This is equivalent to 24 ounces of high-fructose corn syrup sweetened soda, or 4 fruits per day. And what happens after you eat more fructose than your liver can handle? Since fructose is a nutrient just like many of the other things we eat, it’s quite plausible to theorize that bad things happen if you eat too much fructose. In 2002, a study released in the American Journal of Clinical Nutrition sent ripples through the nutrition world and raised a serious handful of eyebrows. In it, they concluded this:

“Fructose, compared with glucose, is preferentially metabolized to lipid in the liver. Fructose consumption induces insulin resistance, impaired glucose tolerance, hyperinsulinemia, hypertriacylglycerolemia, and hypertension in animal models” (Elliott).

However, in this particular study, the researchers were focusing on the additional sugars and sugar derivatives, like high-fructose corn syrup, and not the fructose found in plant foods. On top of that, they used animal models and used non-physiological doses, or doses that are unrealistic to humans in terms of their bodyweight. Later research come out trying to figure out if fructose consumption really was linked to insulin resistance and all that jazz. While the above study used animal models, studies refuting negative consequences of normal fructose consumption were based on epidemiological data. These data support that fructose levels \( \leq 100g \) per day had no negative effect on bodyweight (Rizkalla).

Unfortunately, many people who were ill-informed and with bad intentions took this fructose conjecture and ran with it. Even to this day, people run with it. While I don’t believe fructose is something you should be alarmed about if you don’t drink sodas and eat sh*t, you shouldn’t necessarily go hog-wild on it, either. Moderation, folks.

Not the same as...

Back to our main program...
Drawbacks of low-carb plans

Let’s preface this portion with me stating that low-carb plans, in my eyes, are plans that state you should eat less than 75g of carbs per day.

Although low-carb diets have been shown to improve glycemic control, weight-loss, and lipid profile in the short-term (within a couple of weeks), most of the benefits diminish after a year and the diet is quite comparable to its higher carb counterpart when controlled for calories. A massive review and meta-analysis published this year looked at how well low-carbohydrates fared against balanced diets matched for calories. They found that over time, balanced diets (40% carbs, 30% protein, 30% fat) were almost as effective as low-carb diets in almost all parameters, although low carb diets were more effective at reducing triglycerides, improving lipid panels, and improving insulin concentrations (Naude, 2014).

Carbohydrates are required for intense activity. If you have ever tried to train on a low-carb diet, then you don’t even need to defer to scientific studies. For example, I will use the Paleo framework as an example here. Paleo does a good job at being extremely vague at how many carbohydrates you should consume per day. However, over time, the more fanatical and active Paleo-ites, Crossfitters, began to recognize the benefits of carbohydrates for athletic performance. From the Crossfit website:

“Carbohydrates should be predominantly low-glycemic and account for about 40% of your total caloric load” (Crossfit.com). I don’t recall where I saw this—it was a few years ago—but someone interviewed competitors from the CrossFit games, asking them about their diet and whether they adhered to a Paleo diet. If my memory serves me correctly, not a single one of the top competitors adhered to a strict Paleo diet: they drank buku amounts of milk.

Rich Froning: not getting by eating 2-3 sweet potatoes a day. Source

The example above is Rich Froning, one of the best CrossFit athletes to have ever competed and is a genetic beast. He didn’t start his career in CrossFit, either; it was in powerlifting. I will admit that this guy kicks ass and takes names, but don’t think for a second that all he eats per day are a couple of sweet potatoes. To build a physique and acquire conditioning like him takes years of hard, consistent work, not the fly-by-night plan that promises a six-pack in 4 weeks. By
eating a diet with reduced carbs, you may be able to work towards his physique, but his athletic performance is a whole different matter.

Now in the literature, research shows that too little carbohydrates depletes liver glycogen, which can lead to hypoglycemia (low blood sugar) and subsequent decline in athletic performance (Costill; ADA). With too little carbohydrates, you may 'bonk', which is the term described when the liver cannot maintain blood sugar at the pace that sugar is being used during exercise. This is especially true in endurance sports such as marathon running and cycling, where you are working at above 75% of your maximum heart rate for hours and your body relies on carbohydrates for fuel. Plus, good luck finding many low-carb Olympic athletes standing on the podium. I listed a few athletes up top, but they are far from the rule.

Another major potential issue of going too low in carbs for too long is the **dysregulation of thyroid hormones**. The thyroid gland produces hormones that are specially responsible for regulating metabolic rate. Carbohydrates are known to induce increases in metabolic rate because they stimulate the increase of thyroid hormones. Connecting the dots, we see that if you restrict carbs for too long, you run the risk of decreasing metabolic rate via decrease in thyroid hormones (Muller; Danforth). There is even some talk on low-carb forums where people have unexpectedly get diagnosed with hypothyroidism.

The last drawback of low-carb diets I will talk about in this post is the ability of long-term low-carb diets to **increase levels of cortisol and decrease levels of testosterone**. Some of the literature has shown that staying low-carb for too long throws the balance of androgens and cortisol off-balance, especially in those who are participating in high-intense activities, such as ice hockey (Anderson; Tegelman). For men, this could pose a problem.

Carbohydrates trigger the release of insulin from the pancreas in healthy and most sick individuals (unless you’re type 1 diabetic, in which you lack insulin). Common sense dictates that **insulin is a requirement for survival**. This is pretty much a fact and not many people argue about it, even the low-carb gurus. But what many people overlook is that insulin is also anti-inflammatory. Low-carb experts often claim that insulin is the reason that people get fat. No, I argue, that is not true. Eating too much is the main reason people get fat. Insulin is just there to clear sugar from the blood, which is toxic if levels get and stay high (of course, a carb-based diet will drive up insulin levels in the absence of intense physical activity). Having high blood sugars is indicative of a state of inflammation and without insulin to clear it, you will heal slower, get infected easier, and die quicker. In short, you need insulin. So although eating less carbohydrates decrease insulin production, chronic use of low-carb plans may delay wound healing and increase risk of infection (Hyun).

Carbs, in the form of starch, is **necessary for optimal health and gut function**. Your microbiota, or the gut living in your gastrointestinal tract, require starch and fiber to survive and grow, and in return, giving you health (Chassard; Sonnenburg).

**People who should be more cautious of low-carb plans:**
Very active athletes  
Athletes with high muscle mass  
Those with a history of very-low carbohydrate diets  
Those who have terrible control over their sweet tooth

Although the above are drawbacks of low-carb plans, especially the last two, don’t be deterred from undertaking low-carb diets in a sensible way. One study is not enough to prove a causal relationship. Also keep in mind that the short-term decreases in thyroid hormone and increases in cortisol may not translate to you and do not mean that low-carb diets are inherently bad. Remember that low-carb diets have been and continue to be used with great success to get sick people healthier. It’s just that for athletic performance, you want to be more cautious.

**Should you get low?**

Your carbs probably shouldn’t be as low as this car (source)

Low-carb and high-carb plans definitely have their place. They are each part of the continuum and depending on your circumstances, each can be warranted. For example, low-carb plans may be more suitable if you have a severely deranged metabolism, such as high trigs, abnormal lipid panels, and God knows what else. If you’re looking for a quick and safe way to get your health back in line, low-carb plans can be highly effective.

But as stated above, low-carb diets work their weight-loss magic because they are better at keeping you full, which leads to early satiety. For example, in a conference in Atlanta in 2013, researchers presented a study that measured appetite and hunger ratings after two isocaloric breakfasts: one rich in protein/low in carbs and one with low protein/high carbs. A breakfast with 30-39g of protein and low in carbs was better at curbing hunger than a high carb breakfast, despite being the same number of calories.

Better hunger stomping means less appetite which means less calories. In spite of that, low-carb plans are not all that much better for absolute weight-loss compared to higher-carb diets as long as energy intake is accounted for. Essentially, if you eat less than you need to maintain your body weight, you will lose some weight regardless of how many carbs you eat. This was sufficiently demonstrated by a professor from an Iowa university a few years where he ate a diet consisting mainly of donuts, cakes, and cookies. However, low-carb diets have been shown to be superior in terms of health biomarkers and the aforementioned hunger control. Better hunger control probably means better dietary adherence, which is an all-important factor determining efficacy of diets.
Low-carb plans are not without their consequences. The key in all of this is making smart food decisions and engaging in a good exercise program, not your typical broscience bull crap.

**How I do things**

Liebman’s review on optimal intake ranges for carbs is a very good starting place for many people, and is the range I stick to for most of my and my clients’ activities. Unless you are an uber-active endurance athlete or blessed with God-like genetics, then you are probably better off wading in the swamp of 26-44% of carbohydrates per day. We can turn those figures to 20-40% to make things a bit easier. Having carbs at these numbers eliminates the risk of running into low thyroid, leptin, and energy issues over the long haul.

Eating 20-40% of your carbs also regulate the necessity to meet exercise needs. This is especially important if you want to build more muscle, since the insulin released from eating carbohydrates is potent anabolic stuff (and that’s why constantly high insulin levels lead to fat gain, since fat storage and creation is an anabolic process). If you want to look at this in terms of numbers, then I suggest staying in the range of 75-150g of carbs per day. You can run the lower number on your non-training days and closer to 150g on your training days if you’re fat and/or sick. This number may register higher if you engage in more physical activity.

If you want to do a low or very-low carb diet, be my guest. I am not here to discourage you from doing so. You may very well be someone who responds positively to a lower-carb diet. It’s quite true that many people have anecdotal accounts of low-carb plans doing wonders for them. When I reached 5% bodyfat, I was on a low-carb/moderate fat/high protein diet. When my wife and I were preparing for our two previous powerlifting competitions, we used low-carb plans to decrease body fat while making sure we don’t lose strength and muscle. For people who are trying to lose fat and lose it fast, short-term stints with a low-carb plan might be the ticket that gets you to paradise.

Since adherence is usually the thing that separates champions from losers, you want to make sure you pick a plan, stick with it, and make modifications later when you are done. Low-carb adherence is no exception; sticking to it may not be any easier than sticking to a high-carb plan, though it may depending on your disposition towards food. If you are on a low-carb diet and want to increase your carbohydrates, whether it’s after a powerlifting competition or a photo shoot, then start by slowing adding 20g or so of carbs per day until you reach a level where your mood, performance, and body composition either stabilizes or improves.

**Setting up an efficient plan:**

- Carbohydrates: 20-40% or 75-150g per day
- Fat: 30-40% or 0.5g of your target bodyweight per day
- Protein: 30-40% or 1.0g of your target bodyweight per day

*Bottom line*
Calories are your main priority. In a vast majority of the studies mentioned in this article, the researchers mentioned whether or not the diets were matched in calories. And in all of the studies matching calories but differing macronutrient composition, weight-loss was almost identical. If they were different, we are looking at 2-4 pound difference in a span of 12 weeks. Nothing to really split hairs about.

The shining light about low-carb plans is their ability to improve satiety, leading to possible better adherence to eating plans and moods. Lower-carb diets are also superior to high carb diets in terms of health improvements, especially in the short-term (6-12 months). Effects persist as long as people stay on the diet.

A low-carb plan cannot suit everyone’s needs and goals. Start with those numbers based off of the evidence and modify them to suit your lifestyle.

As always, your feedback is appreciated.

Live life strong,

David

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“They say I’ll get fat if I eat carbohydrates at night.”

“People say to eat oatmeal and fruits in the morning because they’ll give me more energy throughout the day.”

“You need to eat lots of carbohydrates during the day so you don’t lose muscle.”

Again, more conventional wisdom. But like most of the questions I address on here, it’s another contentious issue. Meal timing is one of those things that people feel intelligent talking about but rarely get right. Hell, I am not one to talk, but at least I know one thing:

**Meal timing probably doesn’t really matter for a vast majority of people. What matters is how much you eat per day, what you put in your mouth, and whether you’re meeting macro- and micronutrient needs. If you’re not paying attention to these things, then don’t worry about when to eat carbohydrates and if you should avoid combining fats with carbs, yadda yadda yadda.**

**Now...**

On the other hand, meal timing can be appropriate for some of you. If you fall within one of these categories below, you may benefit from a more detailed meal timing approach.

1. You are a high level and elite athlete.
2. You train more than once a day. This is fundamentally different than doing cardio in the morning and doing lifting in the evening, and is usually reserved for those wanting to compete in a sport.
3. You are beyond the ‘general fitness’ recommendations and are looking for an edge. You have decent body composition and want to increase the pace at which you progress. For example, if you are below 15% bodyfat, you may benefit from a more detailed approach.

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Just because there are 6 donuts don’t mean you get 6 meals. Source

My nutrition philosophy is a three-pronged. However, I am not trying to re-invent the wheel; merely sending the message through a different perspective and medium. Before we move into meal timing, let’s cover what the other two points of the triangle are:

1. Clean up the quality of your food. Strive to make the best possible food choices by eating single ingredient foods most of the time.
2. Eat for your activity levels. Frequency, type, and goals often
determine diet composition. Endurance runners will not eat the
same as general fitness folks.

What about those who are not elite but want to be better than average?

Let’s get one main thing straight. Dieting and eating should not be
complicated. After all, you eat to survive (or to perform, your choice)
so something instinctive and required should not be as complicated
as rocket science. And even if you want to be above average,
nutrition and meal timing still doesn’t have to be needlessly
complicated. The key thing to keep in mind in regards to meal timing
is that you want to make sure you time your meals appropriately in
accordance with the length, time, and intensity of your activity.

This is the face of awesome. Source

In order to be like a superhero, you must first get down the basics,
which are figuring out what to eat and why to eat. To be average and
not become a slouch like over 30% of Americans, focus on single
ingredient foods and eat less junk. For example, eat more vegetables
and non-bastardized meats and less soda. If you’ve never touched a
weight in your life (I mean a real weight—not the 5 pound dumbbells
that you use for your overhead presses), your conditioning sucks,
and you’re one French fry away from breaking your scale, then these
two changes will go pretty damn far. At this point, you don’t need to
worry about meal timing.

If you workout like an average person, maybe do the treadmill 2
times a week and some weight lifting that wouldn’t make my
grandmother sweat, you will probably eat anywhere between 75-
150g of carbohydrates. That’s about it. But we are not here to be
average. I generally focus on two things for those looking to
become better than average. Even for those at a higher level, these
methods work well. These are not listed in priority.

1. Meal timing
2. Daily carbohydrate timing
3. Peri-workout nutrition (future post)

Meal Timing
This is the most general of the three and probably makes the most sense if you really think about it. Let me pose a question to you: if you are on a diet of 1800 kcals, do you think eating 1800 kcals at one sitting will have the same effect on you as eating 1800 kcals spread over several meals? Don't fail on me. In terms of effects, the answer is no and I hope this is what you answered. Now, there are instances in which people can get away with eating 1800 kcals at one sitting (Ori Hofmekler’s *The Warrior Diet*), but I don’t see this as sustainable, and for hormonal purposes, not ideal.

This is Ori. Great shape for his age; but not everyone should eat like him.  

In contrast to what I said above, a study just came out this year that showed two meals to be superior to six for type 2 diabetics. The difference wasn't huge—2-3 pound difference, but it was significant enough. The two-meal-a-day group also experienced other beneficial health effects—lower fat mass, blood glucose, blood glucagon, and C-peptide (6). For some, two meals is a bit on a low side, but it is also the lowest I will go. Six meals, on the other hand, I feel is unnecessary, unless you are a competitive athlete and have inordinate caloric needs (north of 4000 kcals) and find it extremely difficult to fit in all of your calories in 3 or 4 meals.

Spreading out your meals provides a steadier stream of nutrients for your body, especially on a training day. As much as I advocate extending fasting, I am wholeheartedly against evening fasted training. There is never a time when you should fast for the whole day then go train. Ever. That segues well into the next point.

**Fasting**

I am a huge proponent of short, daily intermittent fasting and have been for years. Fasting has been around for a very long time. Fasting is associated with cleansing both spiritually and physically (think religious and cultural practices, like Ramadan). Biochemically, though, fasting is linked to longer life, better brain function, and better lean mass retention in primates. Studies done in humans
show that fasting and restricting carbohydrates intermittently throughout the week yield better insulin sensitivity and body fat loss than traditional caloric restriction in the short-term (1). Now, Ramadan is very similar to the Warrior Diet discussed above in that Muslims eat one time per day, in the evening, within a very small time frame. However, Ramadan happens once a year for a month, so Muslims are not really doing this type of fasting all year around. Not surprisingly, my clients who practice Ramadan drop anywhere from 8-15 pounds in a month.

Want to know something more fascinating? My Muslim clients who come back from fasting and resistance train along with a sensible diet see some of their best gains in strength, fat-loss, and muscle mass.

(This is called reverse dieting in the flexible dieting world, which I will discuss in the future).

Unlike normal fasting practices and those found in mainstream (cayenne pepper and lemonade diet? No thanks), I advocate shorter daily fasts. For most people, I lay out a plan of 12-16 hour fasts for 5 days and 16-18 hour fasts for 2 days. Meal composition should not really differ between the days; only the amount of calories. I will start talking about intermittent fasting (IF) in the future, since there is so much controversy surrounding it. (I will leave this piece about IF: I am about 8% bodyfat and my wife is about 15% bodyfat while on an IF plan, all while experiencing no negative side-effects. We have been IF’ing for about two years).

Avoid extended fasting on training days.

So my philosophy for meal timing is thus:

1. 2-5 meals per day, depending on your schedule.
2. Fast for 12-16 hours 5 days out of the week and 16-18 hours 2 days out of the week

Daily Carbohydrate Timing

The same way that eating manipulating calories throughout the day has different effects on the body, so does carbohydrate timing. I am always for unconventional wisdom, because frankly, conventional wisdom fails the person looking to become better miserably. You need something more than cereal, fruits, and a couple slices of deli meats. You need carbs (the right sources, obviously) and you need to time them right. Now when it comes to carbohydrate timing, you want to eat the bulk of your carbohydrates in the evening.

Yes, you heard that right, in the evening.
An example of a lovely dinner. Pork belly, white rice, pickled radish, kimchi, red leaf lettuce... don't forget the beer.

***I hope my bold statement up there was a bit liberating for you to know that you will not get fat if you eat carbs in the evening as long as you control for total calories. Remember that this is not a ticket to currently eat what you are eating and then add carbs at night. This is especially true if you got fat or getting fatter with the way you are eating right now.

Why in the evening? Well, the research is new and is just starting to come out, but it is promising nonetheless. Some studies show that participants on equal caloric diets but differing meal compositions experienced different results. Those who ate most of their carbohydrates in the evening lost more weight, body fat, retained more lean muscle mass, and decreased their waist circumference (2). The same author did another study that showed that a low-calorie diet with carbohydrates eaten at dinner time prevented mid-day hunger and improved hormonal profiles compared to a traditional low-calorie diet (3).

Unfortunately, Dos Equis is a terrible beer and you shouldn't drink it, regardless of time of day. Source

What should you eat for breakfast?
What’s left, are the other two nutrients: protein and fats. I have especially found that a high-protein breakfast with a moderate amount of fat holds me over very nicely for several hours. Many of my clients feel the same way. And if you ever heard me recommend bacon and eggs for breakfast, it is for good reason.

One particular study showed that postmenopausal women who choose to avoid carbs in the morning have better control over their hunger (4). For those who want to lose weight, better hunger control equals better results (though I wouldn’t recommend eating bacon and eggs day-in and day-out—don’t forget the vegetables and quality starches). This study is certainly applicable as postmenopause is a condition that throws female sex hormones into disarray and makes losing weight, especially the belly fat, more difficult.

Another study showed that adding two eggs to breakfast 5 days a week for 14 weeks led to a reduction in daily carbohydrate intake, which can be beneficial if you are a controlled carbohydrate intake. The kicker to this mentioned study is that those who ate eggs experienced no adverse change to their blood lipids (7).

Training, of course, confounds how you should time carbohydrates. Research by Dr. John Ivy, author of Nutrient Timing, ushered in a whole new era of nutrient timing research in the early 2000’s, showing that carbohydrate consumption around exercise, especially post, was much more effective than consuming all of your carbohydrates in the meals before exercise (8). With this in mind, you would consume most of your carbohydrates after training. We will go more in-depth with carbohydrate timing in the future.

So my philosophy of carb timing is thus:

1. Eat most of your carbs at night, preferably after training.
2. If you train in the morning or day, then eat carbs after training.

Here is how I do it. Remember that my goal is to slowly gain some size while keeping body fat the same.

**Example**

8AM: Wake
10AM, meal 1: 50g whey protein shake with a serving of kelp, 1 tbsp chia seeds, 1 tbsp maca root powder in 16oz unsweetened, plain almond milk, 1 tbsp fish oil, small handful of macadamia nuts
1PM, meal 2: 40g of protein through turkey bacon with handful of mix nuts; 5 soft-boiled eggs and 3 cups of broccoli florets in lemon juice, parsley, salt, pepper, and red pepper flakes
4PM, meal 3: 50g whey protein shake with 1 tbsp. fish oil, handful of carrots
7PM, meal 4: 7oz canned, bone-in salmon, lemon juice, chopped spinach, 1 cup of oatmeal, and all-purpose tomato sauce
10PM, meal 5: Half a rotisserie chicken with stone ground mustard, kimchi, 2 cups or white rice or 3 baked potatoes
12AM: sleep

Comments? Questions? Drop a line.
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Fasting Fat Loss Meal Timing

NUTRITION

SHOULD YOU HOLD THE SALT? PART II

SEPTEMBER 8, 2014 | LEAVE A COMMENT

Not the packaged kind, but the real kind. Source

I dedicate this to all of you ramen lovers out there (which includes
me). If you don’t love ramen, then... I’m sorry. OK, I’m not sorry. Ramen is not real food so there is no reason why I should be apologizing. But it’s still damn good, in my opinion.

Wait, my conscious said something to me: "It is real food, damnit!" OK. It’s real. Just look at the picture.

In the first post of this series, I went a little bit into what salt is and how dietary salt affects your health through blood pressure manipulation. Studies upon studies have been conducted trying to verify that salt restriction leads to blood pressure reduction, thus leading to a decreased risk of cardiovascular disease. It’s true that salt does mingle with blood pressure and that high blood pressure is a pretty darn good indicator of heart disease; but so do other things. In this post, I will talk about these other things—namely stress. I also talked about how context plays a huge part in how your body responds to salt—if you’re leading a generally unhealthy lifestyle, salt will harm you. If not, you probably don’t have much to worry about.

Sometimes when I read research, I feel as if investigators are just moving from one target to another, like a firing squad. They hit one target, liked what they saw then moved onto the next—first fat, now salt. It’s not a surprise given that blood pressure control is a huge market for pharmaceutical companies; literally, billions of dollars.

What’s the issue then?

Experts often talk about how we need this nutrient and that nutrient, or throw out a blanket statement such as, “decrease sodium to decrease blood pressure”. Many times, these messages are often lost in translation and people will concede without analyzing why they’re doing said modification. Worse yet, many will read a single article on a popular mass media outlet, not do any additional research, and talk about an issue with utmost confidence while citing the source. That’s cool. Only problem with that is that it has many problems. Take nutritional research with a grain of salt.

So, do we take into consideration our overall dietary and lifestyle habits or just throw salt out with the baby and the bathwater? We have a hard time considering context, making us miss the forest for the trees. And not surprisingly, this ‘lack of salt knowledge’ is actually driving people to eat less salt, which has its own shortcomings (more on this later).

Eating too much of anything is bad, unless it's popcorn shrimp (but then you may get HBP). Based on my amazing logic, eating too much salt is obviously bad. Legend has it that too much salt intake leads to a condition called 'hypertension', or high blood pressure, which is then intricately linked to an increased risk of heart disease and stroke. Considering I have a family history of strokes, I hold this topic close and dear to my heart (get it?).

Guess what else is bad for you? Breathing. Too much exercise. Eating too many Brussels sprouts. A few years ago, a Chinese woman was rushed to the emergency room due to thyroid failure because she ate 2-3 pounds of raw bok choy for a few months. Hey, at least she was getting her vitamin C. See the trend? Things that are good for
you in moderation will send you quicker to the grave than the Undertaker.

His name is Extreme and he’s coming for you. **Source**

**The battle wages on**

Salt is a victim to dichotomy. Though, there is a somewhat solid connection between high salt intake and blood pressure, we see some studies refuting the proposal that deep salt restriction is actually beneficial. Some studies actually showed no difference between high and low salt intakes between two different groups of people. This is not surprising, given that normal people with a normally functioning kidney do not exhibit increases in blood pressure compared to someone who is sick or is salt-sensitive (Azak; Weinberger; Franco). But the real question is whether salt actually leads someone to be hypertensive in the first place.

The battle between the high-salt/low-salt clans is like a good arm-wrestling match: there’s a lot of back and forth going on. Since there seems to be an association between increased blood pressure and risk of cardiovascular disease, researchers wanted to see if the opposite is true in the clinical setting: that too little salt is harmful. A good deal of the retort is based on speculation and basic physiology of the body’s salt regulation system; in particular, the RAAS. As you will read below, other reports show that restricting salt worsens clinical outcomes, overactivates the RAAS, leads to electrolyte imbalances.

I mentioned in my earlier post that the RAAS is crucial for survival, and proper function of it will determine how long you live and the quality of life. Its primary responsibility is the regulation of electrolyte balance through hormone action (Atlas).

**Health effects of too little salt**

Before we move on, let’s see what is considered a “low-sodium diet”. According to research, a low-sodium diet can be anything under 2.3g of sodium per day. A high-sodium diet can be anything above. For instance, the U.S. average is 3.4g per day. This, according to health authorities, is far too much. If we cut intake to 1.5g per day, we would save over 400,000 lives per year (CDC).

Every system in the body exists for a reason (except maybe the appendix). If you know my philosophy, you know that I believe that finding a proper balance is the key to a long, healthy, and successful life. It’s no different with salt intake. If you’re constantly walking around in a drunken stupor, don’t exercise intelligently, eat like you’re the Michelin Man, and watch more TV than the dust on your couch, then managing certain nutrients in your diet will probably be a good idea.
Mismanagement of the RAAS, primarily through a low-sodium diet comes with its own risks. As much as some activation of the RAAS through moderate salt intake regulates arterial pressure and is involved in heart muscle contractions, too little sodium over-activates the RAAS, which forces it to release more renin and aldosterone, hormones that are directly responsible for fluid balance and urine retention.

This whole bit about the RAAS and cardiovascular disease stirs up quite a controversy. Quite a few studies looked at the interaction between the RAAS and health. So how exactly does over-activation of the RAAS through a low-sodium diet actually increase the risk of CVD? The proposed mechanism by which RAAS is thought to contribute to heart failure is because renin, a hormone released by the RAAS, preserves sodium by enhancing sodium reabsorption by the kidneys. Renin’s other functions include mediating extracellular fluid volume and arterial vasoconstriction. Having increased levels of renin in the blood dilates blood vessels; increases the concentration of water, shifting the balance towards hyponatremia (low sodium concentration); increases serum potassium levels; and reduces glomerular filtration rates (kidney) (Sealey). Asides from sodium, another major way that renin is secreted is through activation of the sympathetic nervous system.

To investigate whether too little salt and too much renin contributed to CVD, researchers of a 1997 study found that PRA (plasma renin activity) was independently associated with heart attacks; for every 2 units of PRA, heart attack risk went up by 25% (Aldermann). Another study done in 2010 again measured the risk of PRA and CV outcomes:

“*The association of PRA with outcomes was observed after correction for hypertension, hyperlipidemia, diabetes, a family history of cardiovascular events, smoking, renal failure, and the use of statins. In conclusion, elevated baseline PRA is associated with cardiac morbidity and mortality in patients with coronary artery disease but normal left ventricular function and no previous MI or HF*” (Muhlestein).

And then in a study done in 2011 and published in the European
“The association of high NT-proBNP and high PRA identified a subgroup (22% of the study population) with the greatest risk of cardiac death. In conclusion, PRA resulted in an independent prognostic marker in patients with systolic heart failure additive to NT-proBNP level and ejection fraction” (Vergaro)

Along the same lines as the above study and published in the same journal:

“Analyses of specific causes of cardiovascular death showed that for each standard deviation increase in log-PRC there was a 22% (P = 0.006) increase in risk of sudden cardiac death and a 23% (P = 0.033) greater risk of death due to heart failure. The association of PRC with cardiovascular mortality remained stable after adjustment for established cardiovascular risk factors, ongoing antihypertensive medication, immunoreactive angiotensin II, and aldosterone levels” (Tomaschitz).

The HOPE study researchers also had this to say about PRA:

“High PRA is an independent predictor of major vascular events and mortality in a stable population of high-risk patients with atherosclerosis and/or diabetes. Although an increase in PRA could be a marker of more intense antihypertensive therapy, our results suggest that PRA may represent a risk marker and potential target for therapy in high-risk patients with atherosclerosis and/or diabetes” (Verma).

As a side note to the last quote, the first clause of the last sentence —“marker of more intense antihypertensive therapy”—signifies strategies that clinicians use to reduce BP, namely a low-sodium diet and medications. This is in stark contrast to the original HOPE studies that showed that Angiotension Converting Enzyme (ACE) inhibitors actually reduced the risk of heart disease.

Additionally, low-sodium diets increase levels of catecholemines—adrenaline and noradrenaline—and increase levels of cholesterol and triglycerides. Additionally, too little salt may actually worsen some clinical disorders, such as congestive heart failure (Graudal; Paterna). In a condition such as CHF, you will experience lower extremity edema, which is usually caused by fluid imbalances; but whether this is a problem of too much sodium is unknown, as shown by the lack of evidence for sodium restriction in people with heart failure. Some researchers readily recommend a 3g sodium restriction as opposed to 1.5g and lower (Lennie). There are even some studies suggesting that by inhibiting the RAAS, risk of type 2 diabetes decreases (Andraws).

Ready for some more heat? In some studies, a low-salt diet has been shown to increase insulin resistance, or decrease the body’s ability to use insulin to store energy (Garg). In these studies, despite having a higher blood pressure on the high salt diet (1-3 mmHg), salt sensitive subjects also experienced a decrease in fasting blood
 sugars, insulin, and homeostasis model assessments. In another study done by the same author, a low-salt diet increased insulin resistance in healthy subjects (Garg). So it seems that salt has an effect on blood sugars, as well.

**A suitable cut-off for salt**

These types of studies usually set off a firestorm of responses and comments. No surprise there, given how health authorities have so much vested interested in salt. After decades of espousing low-sodium diets, how could they turn back? It’s not like they’re completely wrong, though. Many experts just decide to live in the minutia instead of giving suitable ranges.

We had a few studies come out this year measuring urinary output for thousands of people. Urinary output gives an accurate picture of how much salt someone is consuming. What they found is that sodium intakes below 3g and above 6g were associated with an increased risk of all-cause mortality, meaning you have a higher chance to die from other diseases asides from what they were studying—cardiovascular disease. Investigators from the PURE study measured urinary sodium excretion and came to tentative conclusions regarding optimal salt intake. After an average follow-up time of 3.7 years in 3317 participants, they saw that optimal sodium excretion to be 3-6g per day. Additionally, people with low potassium excretion levels—and thus either low dietary potassium intake or high sodium intake or both—tend to be at a higher risk of CVD independent of dietary salt intake (O’Donnell). What these researchers saw was that people who usually ate high levels of sodium also ate low levels of potassium.

The Cochrane Collaboration, an organization filled with reputable professionals who conduct noteworthy and highly refined reviews on relevant topics, also did their dig on salt. In their report on randomized trials, they measured an average daily salt intake of 9-12g per day. They concluded that a more feasible target is 5-6g per day, and could even make the lower cut-off point 3g... so making it 3-6g per day (He).

By anyone’s standards, 9-12g is high. Unless you’re an athlete competing in ludicrous climates, there’s no reason to eat that much salt. And how can anyone eat all that salt anyway? Ah, but of course, through processed foods. I digress.

**With all things being equal, high sodium intake inhibits the action of the RAAS. Increased RAAS activity through low-salt diets or intense hypertensive therapy leads to an increased PRA, which is a risk factor for heart disease, diabetes, and stroke. So why does high sodium intake increase risk of heart disease if it inhibits the RAAS and reduces PRA?**

For one, there is the extrapolation that since sodium increases blood pressure and blood pressure places some at an increased risk of heart disease, it stands to reason that high salt intake leads to heart disease. Perhaps people reached this conclusion because despite
inhibition of the RAAS through a high-salt intake, people were still suffering from blood pressure disorders. In this study, researchers pointed out that the RAAS can manipulate PRA to manifest hypertension in two ways: the low renin, sodium-volume dependent form and the medium to high hypertension form.

What the question above is considering is that hypertension can happen at both ends of the spectrum, when salt intakes are either too high or too low. If salt intake is too high, body sodium content increases to the point where RAAS is turned off (Laragh). This is probably how high sodium intake can contribute to the development of high blood pressure.

Yet, high salt seems to be just one part of the equation. Eating too much salt leads to increased sodium excretion through inactivation of the RAAS, but high sodium excretion also leads to low potassium excretion, which is probably more important than sodium in terms of regulating blood pressure (Aaron; O’Donnell; O’Donnell). Generally, people who usually have high risk profiles of diseases through a high salt diet are not the healthiest of the bunch—low potassium intake (fruits, vegetables, non-deep fried potatoes), calcium (dairy, vegetables), phosphorus (vegetables), magnesium (cacao, vegetables); smoking; drinking; almost non-existent exercise habits; and a landfill worth of unnecessary stress.

What does all this mean?

If all of this flew over your head, don’t worry. No one really knows how much sodium each person should eat and there is no crystal clear answer. I may be painting a picture showing that sodium restriction is not necessary, but that’s not it, either. I will constantly remind you that context matters. But in the face of conflicting research and the inability to precisely control for non-dietary behaviors, I can’t help but question the validity of much of this salt research.

Outside factors, like genetics, dietary and lifestyle habits, and physiological responses of a low-salt diet, definitely goof around with BP. For example, the Koreas Center for Disease Control and Prevention didn’t even state that high sodium consumption was a primary cause for HBP. They listed alcohol, smoking, and stress. I will even go so far as to say that the three mentioned factors contribute to increased blood pressure more than sodium.

I am not going to talk about alcohol and smoking here, since most of us know that too much drinking and smoking don’t do any favors for your health. By the way, according to the World Health Organization, South Korea is #6 in the world in terms of units of alcohol sold per capita.

Sodium is not the only thing to look at

I think it’s quite amazing how often salt gets thrown under the bus, and we’re not talking about to make the road less slippery, although talking about salt can certainly be a slipper slope. Wow, quite a few puns for one sentence. To just look at sodium as the culprit in health decline is not truly looking at the whole picture.
Many mass-produced books released today are not truly nutrition books, but books on how to give your whole lifestyle an overhaul. Although their main focus is nutrition, they take a multi-pronged approach to your health. Books are not alone in this regard, either. Organizations such as the American Heart Association consider other factors when it comes to heart dysfunctions. The primary example I am going to use here is stress.

**Stress is a true killer**

Based on physiological responses, stress is involved intimately with every preventable disease out there. Studies have repeatedly shown that stress elevates blood pressure immediately by stimulating the nervous system to release hormones that constrict blood vessels, thus increasing force of blood flow (Kulkarni). This part of the nervous system is called the ‘sympathetic nervous system’ and is involved in responding as the ‘fight or flight’ mechanism. Most importantly, your body doesn’t know how to differentiate between a small stress such as a traffic jam and a major stress such as hanging off of a cliff. Running from a bear or preparing for a throw down behind the local pub can be considered major stresses that were present throughout human history, leading to the development of this crucial system.

As much as I dislike running... [Source](#)

The problems arise when small stresses accumulate in our daily lives, whether it’s through work, toxic relationships, or having a generally pessimistic view on life. This puts our bodies in a constant state of alertness and steadfastness. And to test whether lesser stressors lead to hypertension, researchers conducted studies measuring how work and psychological stress predicts CVD. They found that it did; just worrying about work increases heart rate by almost 10 beats per minute (Matthews; Vrijkotte; Pieper). Things like a broken copier machine, getting packed like sardines in the subway, and watching Kim Kardashian cry over her man on this month’s tabloids all add to the little stresses that cause chronic and sustained elevations in blood pressure. Seriously, researchers used video games to measure increases in blood pressure (Matthews). Compared to how long humans have been around, none of these were present until recently, when society got bored and desperate for money that they had to create reality TV shows and follow people who contribute to the endless yo-yo dieting paradigm (/end rant). So although stress does not directly lead to hypertension, it sets off a cascade of reactions that eventually do.
“Kanye said I couldn’t go to the nightclub with my other spoiled friends!” Source

**Research studies aside, is it not surprising that despite the myriad of pharmaceutical drugs that the rates of high blood pressure, stroke, heart disease and other diseases are not decreasing at the same rate that medications are being prescribed? In the future, I will touch on the pros and cons of taking blood pressure lowering medications. Interestingly enough, some of these medications actually increase the risk of diseases that they are marketed to prevent.

So are you saying that sodium should be ignored?

Nope.

I am saying that sodium is not the nutritional villain everyone thinks it to be. Again, remember that context is your friend here. Like saturated fats, sodium is another nutrient that is guilty by association. Have you ever seen someone who has high blood pressure? Next time, if you care to, take note of their lifestyle and diet. Nine times out of ten, they will be leading a lifestyle conducive to high blood pressure and health disorders. We’re talking about diets high in processed foods, getting hung up over every little and big thing—traffic, phone calls, nagging kids, etc.—to smoking, drinking, and plopping their lazy behinds on the couch to watch Djokovic get buried by Nishikori in the 2014 U.S. Open... while eating ice cream. This is not an exaggeration. I can’t count on one hand the number of people I have counseled who led this exact lifestyle. And when I go to the supermarket, I notice that the people who get winded walking through the produce section are sprinting to the cookies and crackers aisle after picking up their hypertensive medications... without skipping a beat. To these people, sodium is just one of those things that tend to be high because their lifestyles are in the gutters.
Nishikori probably doesn’t have a problem with his BP. Source

Wrap-up

In short, the issue with sodium is overblown. It’s also misconstrued. People read research and automatically think, “oh, if the New York Times says this, it must be true”. Go a step further and those who are more enlightened will read research and think, “oh, if this paper says this, it must be true”. Except, research is not always black and white—it’s more of a yellow light that points at an issue to be explored. In this case, it’s salt—and there is no shortage of research either supporting or refuting drastic salt consumption reductions.

I’m in neither camp exclusively, though I tend to lean towards the refutation camp. This is not because I like to try to antagonize the issues I grew up with and the authors championing them. It’s because I am both genuinely curious to see what the research really says and how that can affect the service I provide in the future. For instance, if I can get you the same results with either a low or moderate sodium diet, which one would you prefer?

On the other hand, I do feel that salt can be overdone, just like saturated fats. Unless you have no problem with it, I feel the 1.5-2.4g restriction of sodium is unnecessarily too low. Actually, I wouldn’t take issue with it if research actually showed that these levels were unquestionably better than 3-6g.

Here is what I see based off the research:

- Going above 6g of sodium per day affects blood pressure in a negative way
- Low-salt (1.5-2.4g per day) can drop BP by up to 11 mmHg in salt-sensitive people
- Low-salt overactivates the RAAS, which is a risk factor for heart disease
- Work-related stress affects blood pressure
- Worrying affects blood pressure
- Video games and other acute episodes that flip on the sympathetic nervous system increase blood pressure
- Rather than decreasing sodium (unless it’s at 9-12g per day), increase potassium

As always, your feedback is appreciated.
Live life strong,

David

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The overriding theme of this blog is to provide you, my dear readers, with applicable and cool information about health, fitness, and nutrition. I usually refrain from splitting hairs and will continue to do so. However, this take on salt may be a bit more detailed than what many are comfortable with. However, I feel that salt is a huge health issue that affects all of our lives. If not the health aspect of it, it’s the ability to liberate yourself from a lack of knowledge. Armed with the information here, you can decide for yourself whether you should agonize about including salt in your diet or not.

Salt.

Asides from L O V E, it’s another four letter word that evokes all sorts of emotions, especially to those in the nutrition field. Not a day passes by that I don’t get sucked into a conversation about salt.

“Oh, you put salt on your food? That’s bad for your health!”
“But won’t salt raise your blood pressure?”

“Salt hurts your kidneys!”

Along with fat, salt is one of those things that seems to get looked at through the scope of dichotomy. It can’t escape being thrown into one camp or the other. And like fat, salt is one of those things that hit close to home for me, since I also have a family history of high blood pressure, stroke, and heart disease.

My heritage is South Korean. Though I was not born in South Korea, Korean parents gave birth to me, and from a young age I ate somewhat traditional Korean foods. I say somewhat because it was typically poor-class Korean fare reserved mainly for people who have no money but just need to put something in their mouth. As long as I can remember, I usually ate a porridge made of white rice, raw eggs, and soy sauce three times a day.

Now that I am older, I can cook and buy my own food. Korean cuisine is still an intricate part of my life, but I have some variety now, although I am still poor. So how does Korean food relate to what I want to talk about today? My topic today is salt, and if there is one thing food-related that Koreans love, it’s salt. Kimchi, soup, noodle dishes, side dishes, meat dishes... you name it and most likely the dish will have a truckload of salt. It’s not uncommon to see a serving of a certain dish to have over 1g of salt. Even I think it’s crazy how much Koreans love salt.

But it’s also not a surprise that Koreans suffer very high rates of high blood pressure (HBP). According to the Korea Centers for Disease Control and Prevention, one in four South Koreans over the age of 30 have high blood pressure. At the moment, it is THE CHAMP for causes of death in South Korea—diabetes trailing behind it. To this day, there are a handful of culprits responsible for giving Koreans HBP, but one thing that authorities, especially health figures, agree on is that high salt consumption is killing Koreans.

Or is it?

Being a maverick, I want to explore the theory that high salt consumption is like digging ourselves an early grave. Salt is like many of the other contentious issues in health and nutrition—there are two sides to the coin. I like to look at both sides to the argument. In this case, I want to get you to know the pros and cons salt consumption, and in specific, what kind of risks high salt consumption carries, as well as the risks of low salt consumption. In this post, I want to go over the perceived benefits of sodium restriction.

Being a South Korean and having a family history of HBP, I have always wanted to talk about salt. It’s another one of those hotly debated topics that no one seems to agree on, yet everyone feels that they have the answers. I, of course, do not have the answers, but I hope to shed some light with this post. And of course, salt is one of those things that are, surprise surprise, context-dependent.

Again, this pesky word, context-dependent. Why can’t we just figure out what nutrients cause what? Because you’re not a cell in a petri
dish, I am assuming you are a human being that eats more than just salt. As such, salt will never act in isolation and will influence your health depending on your current health, lifestyle, physical activity levels, genetics, and to a certain degree, gender.

The cure for the world is in this dish. Source

“In the past year, how many times per week did you eat hot dogs, or sausage, or deli meats?”

If you don’t remember, welcome to the club. This type of question is typical when researchers are trying to figure out dietary habits of people in their studies. Do you think it’s accurate to just ask you what you ate for the past year, extrapolate your current nutritional status based on what you thought you ate 3 weeks ago, see that your blood pressure is a bit elevated, and blame it on salt? Well, that’s exactly how many of the current guidelines on salt came to be. On the other hand, better research is coming out using trials and more accurate statistical models. Before we get into the studies and what they show on salt intake, let’s take a cursory tour of salt, your new best friend.

Food Frequency Questionnaire. One tool, but not the end-all-be-all. Source

What is salt?

Chemically, it’s a combo of two elements, Na (sodium) and Cl (chloride), but it’s usually just referred to by authorities as salt, dietary salt, sodium or dietary sodium. And when researchers conduct studies on salt’s health effects, they measure how much sodium you piss out, or urinary sodium excretion. Chlorine also does some stuff in the body; for the most part, however, it’s just attached to the hip of sodium and goes along for the ride.

When you hear the term ‘electrolyte’, you are hearing what we call a group of minerals that carry an electrical charge and are responsible for fluid balance, muscle function, blood pH, and other metabolic processes. Sodium and chloride, along with calcium, potassium, magnesium, and phosphorus, are the more common electrolytes. Sodium is a necessary component of our physiology and thus, our
diet. We need to eat sodium for survival. That’s why we have created intricate sodium regulation processes, such as the Renin-Angiotension Aldosterone System (RAAS), which inhibits urine production during times of salt scarcity. It’s also responsible for maintaining arterial pressure, tissue perfusion, fluid balance inside and outside of cells, and is involved with proper nerve and muscle function (Atlas). In fact, proper functioning of the RAAS is important for heart muscles and just generally keeping you alive.

Additionally, the taste for salt does not get distorted as much as sugar. What I mean by this is that the mechanism for detecting salt in our foods is very precise and accurate. If a food is too salty, most people will notice and may even be turned off by it. This could possibly be an evolutionary mechanism that pressured humans to seek out salt, which is necessary for survival. In contrast, foods that are high in sugar were meant as a reward or treat, thus suggesting they were not necessary to hunt down deer.

Health effects of too much salt

Many, MANY, studies have looked into the health effects of salt. In particular, these studies wanted to study the effects of salt consumption on blood pressure and health since an elevated blood pressure places greater stress on the walls of the blood vessel, damaging them over time. In turn, this places people at a greater risk of heart disease, stroke, and organ failure. Some of the most influential studies were done using observational and epidemiological studies, following hundreds of thousands of people over years and measuring their dietary salt intake through questionnaires, self-reported intake, and observation, although there were quite a few randomized controlled trials, as well.

The latest to have come out was a study that measured the average global consumption of salt and how that translates into cardiovascular deaths. In it, researchers concluded,

"[The] 1.65 million deaths from cardiovascular causes that occurred in 2010 were attributed to sodium consumption above a reference level of 2.0 g per day... These deaths accounted for nearly 1 of every 10 deaths from cardiovascular causes (9.5%)." (Mozaffarian)

Quite staggering numbers. For reference, 2.0g is actually lower than the 2.3g that we are often told are our daily sodium targets. For people who are over 51 or have hypertension or are diagnosed with kidney, liver, and heart failure, that number drops down to 1.5g.

More than ten years ago, U.S. health authorities devised a plan called DASH (Dietary Approaches to Stop Hypertension) to tackle the ongoing problems of heart disease. Its main premise is to control blood pressure through mainly sodium manipulation. Studies have been done on this diet and they showed promising results. There’s even a DASH-diet book. A meta-analysis done in 2013 pooled together high-quality study designs implementing the DASH program and found this:

"Results showed that a DASH-like diet can significantly protect against CVDs, CHD, stroke, and HF risk by 20%,"
How much difference does all of this make?

Based on these studies, health authorities began to go knife-happy (some encouraging nudges from some pharmaceutical companies may have played a role here) and recommended people slash their sodium consumption. Food corporations began to stick labels on their foods stating “low-sodium”, “no sodium”, “no salt added”, etc. The nutritional bandwagon just got much heavier.

But when looking at these studies, we can’t just take “decreased blood pressure” for an answer... unless of course that’s all you’re looking for. The problem with just walking away with an answer like that is that you’re left asking a looming question:

“Will it be worth it?”

Source

This is absolutely a no-brainer if you’re in critical condition or suffering from an end-stage condition where death is staring you right in the face, such as cirrhosis, end-stage kidney failure, stage five cancers, etc. But at this point, not much will help you in the way of nutrition therapy; dietitians and the rest of the medical team are simply trying to make the passage to the other side of the river as painless as possible.

What if you’re healthy or have room to improve? Do you really need to cut sodium to 2.3g per day? As a frame of reference, ¼ teaspoon of salt is usually about 400mg of sodium, so 1 teaspoon would be about 1600mg of sodium. Per day, you’re looking at 2 tsp of salt.

By following the DASH diet and reducing your sodium intake to 2.3g, you will reduce your systolic blood pressure by 1.3 mmHg if you don’t have clinically diagnosed hypertension. By further reducing sodium to 1.5g per day, you will reduce your systolic blood pressure by an average of 7.1 mmHg (Sacks). Other studies using a low-sodium diet showed average systolic reductions of 1 to 4 mmHg (Taylor).

If you think 1.5g of sodium is an awfully low number, that’s because it is. For some people, the super reduction of sodium only leading to a 7.1 mmHg drop in their blood pressure may not be worth it. Indeed, it may not be if you’re healthy. However, for some people, that level of reduction may be necessary and can actually knock them out of stage 1 or 2 hypertension. Of course, it’s not as if you don’t have to cut salt, but for the sake of discussion, what if you want to?

Just cut sodium?

The ironic thing is that researchers don’t attribute the decrease in blood pressure to sodium alone. In the original DASH studies, the subjects were put into either a control diet (restricted sodium but
eating standard American fare) or the DASH diet. Of course, the DASH diet lowered BP a bit more than the control diet, but the DASH-diet also had higher levels of fruits, vegetables, and dairy; not to mention the DASH groups had nutrition education, which is crucial in patient self-efficacy. Also, the DASH-diet recommends limiting alcohol.

By increasing F, V, and dairy, you're increasing levels of vitamins and minerals. The main minerals that researchers are bringing into the equation of BP reduction are calcium, magnesium, phosphorus, and most importantly, potassium. Potassium acts in opposition of sodium because they carry opposite charges and are found on opposite sides of the cell membrane. Whereas moderate sodium consumption inactivates the RAAS, potassium activates it. However, potassium-induced activation leads to a relaxation of the blood vessels which lead to more elastic blood vessel walls, reducing the force of blood flow (Haddy; Aaron). By having a good balance between the two, you maintain a desirable electrolyte balance. In the DASH-diet guidelines, we’re told to consume 4.7g of potassium per day.

There is one thing that the DASH diet did uncover: sodium can and does fiddle around with blood pressure. As noted above, the control diet ate a reduced-sodium Standard American Diet (SAD), yet still saw BP reductions. So just by reducing how much salt you ate, you can see almost immediate drops in blood pressure. But how beneficial the magnitude of those drops will be really depends on where you currently are with your health.

**Wrap-up**

Before we wrap up this post, let me say a few things that are often overlooked when considering how influential certain nutrients are on your health.

**You could do everything right and still be unlucky.** In the hospital, awfully bad things can happen to you at the drop of a dime. After a perfect surgery, you may be recovering with the proper nutrition support, but still pass because of an infection that wasn't seen in the cards. In the same vein, these studies looking at how sodium restriction lowers blood pressure can really only look at one thing. **RISK.** Lowering blood pressure does not guarantee your safety, but it lowers your risk. Don’t make the mistake that lowering risk means you won’t still escape what Mother Nature has in store for you. If that was a bit morose, I apologize.

Finally, it’s highly unlikely that you are leading a lifestyle exactly similar to the subjects in the studies. If they smoked, drank, or engaged in activities that affected blood pressure (think stress), then they kept smoking, drinking, or engaging in activities that affected blood pressure. Their habits were “adjusted” for by researchers using an algorithm to standardize so their habits do not skew the results of the studies. Let’s remember that research studies shed light on an issue, not stand for a direct translation.

I will close with this quote from an editorial from the Journal of the American Medical Association, which will segue nicely into the next post about the drawbacks of sodium restriction:
“Reducing sodium can lower blood pressure in both normotensive and hypertensive patients. There is no direct evidence that it reduces cardiovascular mortality” (JAMA).

Your feedback is always appreciated.

Live life strong,

David

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whenever someone asks me a loaded question like this, my answer is always:

**It depends.**

That is the honest and simple answer I give to everyone who asks me this question, including clients. Certainly, this is also the answer that most people do not want to hear. But with further explanation, many people's adverse reactions turn to curiosity, and eventually (hopefully), compliance.

I take pride in providing a no bullsh*t service that doesn't paint a broad stroke as the "best" or "one and only way" to do things. I instead focus on what's optimal for people under their unique conditions. Not everyone has the same lifestyle habits, or eat and exercise the same way. That's precisely why you shouldn't follow a cookie-cutter meal plan you find on the internet. Why? Simply look at the person who is espousing the diet. They are super-ripped, probably have great genetics, and probably spend a lot more time in the gym than you. Let me not forget to mention that you may not enjoy eating what they eat. And if you are unfamiliar with macronutrient (protein, fats, carbohydrates) content of certain foods, hardly think about swapping foods.

On the other hand, there are some general categories that a majority of people will fall under even if their life stages are different. For example, a student and a working professional are in similar circumstances, as opposed to a student and a competitive bodybuilder. The comparison made here is assuming that the student and business professional do not treat training and eating like it's their job. In this case, the student and business professional will have training and nutrition protocols that bear more of a resemblance to each other than the student and athlete.

Now, for those of us who have lives outside of the gym, there are a few general guidelines that you should follow if you want to make the most of your nutrition plan.

**The importance of keeping a regular meal schedule**

This bears repeating. Research has shown over and over again that having a **consistent** meal pattern gives you better results and health. It is the key factor in making meaningful and lasting progress. There's not too much debate about this considering how not many follow-up studies are in the literature after a few established this fact. To quote a study done in 2004,

"...irregular meal frequency appears to produce a degree of insulin resistance and higher fasting lipid profiles, which may indicate a deleterious effect on these cardiovascular risk factors" (Farshchi, 2004).

What the above essentially means that if you eat with no regularity or your meals are all over the place, you increase your risks of becoming sick or experience more complications if you are sick.

When it comes to nutrition, consistency is your trump card for many reasons, which we will discuss below.
But what about eating lots of small meals per day? People say you need to keep ‘stroking’ your metabolism?

This might work if your metabolism works like a dog. Pet your metabolism frequently and it will roll over, pant, and reward you with unconditional love. Except this isn’t really how your metabolism always works.

If you have read any sort of nutrition-related research over the past ten years or read the news or peruse fitness magazines, you have probably heard that you should eat more often to "increase your metabolism". Researchers have constantly been investigating this idea that a high meal frequency (6+ meals) somehow increases your metabolism. After decades of research and investigation, researchers of high-quality studies came to a general conclusion: for weight loss, it really doesn’t matter how often you eat; it’s the amount of calories that matters at the end of the day. To quote a research study from 2010 about this:

Researchers conclude that "increasing MF [meal frequency] does not promote greater body weight loss under the conditions described in the present study" (Cameron, 2010).

This study was a high-quality study, done for 8 weeks, and both groups ate the same amount of calories. The biggest difference was that one group ate 6 times per day while the other ate 3 times. Additionally, another study in 2012 added to the mounting evidence that a higher meal frequency does not confer extra benefits:

"RMR [resting metabolic rate] and appetite control increased in the LFr [low-frequency] diet, which can be relevant for body weight control on the long term" (Munsters, 2012).

And in one particular study, increasing meal frequency actually led to more hunger. To quote a study done in 2013:

Researchers conclude that "increasing meal frequency from three to six per day has no significant effect on 24-h fat oxidation, but may increase hunger and the desire to eat" (Ohkawara, 2013).

As with any study, you have to keep a couple of things in mind:

- These studies were done on people who were not terribly active. They might represent the typical gym-goer, but not someone who takes their training seriously, like an athlete. So of course, these findings may not apply to someone competing athletically at a high level.
- **YOU** may not like eating 3 meals per day, whether for your own sanity, Obsessive Compulsive Disorder, or because you are an athlete and need to nourish yourself constantly.

What about us regular folk? And yes, this
includes me.

Now let’s see how we can get general fitness folks who have no intention of standing on stage in a banana hammock or running a marathon to look good naked (the below is assuming that you already know your calorie, protein, fat, and carbohydrate needs).

1. **Keep a food journal.** You don’t need to get a fancy leather strap and buckle journal for this one. A composition book will do. In it, you will keep track of **what, when, how much**. A food journal is the simplest yet most effective way to stay accountable. It’s also one of the main things people avoid doing. If it’s so effective, why don’t people do it? **If I knew the answer to that question, I wouldn’t even need to look for clients and I would be a financially successful personal trainer.**

   The reason I believe people don’t keep a food journal is simple: they’re scared of what they may see, lazy, or both. The journal may not be a person, but seeing for your own eyes what you eat on a daily basis may shock you. And no one wants to be told that what they’re doing is wrong, not even by themselves. If you honestly can’t take 30 seconds out of your meal to jot down what you’re eating, you’re lazy—plain and simple. Unless you’re making an insane amount of money, chances are high that you work 8-9 hour days and probably commute. Why not write down what you ate or will eat while commuting? Seriously, how hard is it to write this down?

   12pm...5 eggs, 2 cups broccoli, 1 cup berries

   You can make time to go out and have a few drinks with your buddies, but can’t keep track of what goes in your mouth? Pssshaw.

2. **Find your preferred eating frequency.** If you’re not a competitive athlete or currently in-season for a physique sport, I suggest eating 3-4 meals per day. In the event you want to deviate from my suggestion, make sure you stick with it. If you decide you only want to eat two meals per day, then eat two meals per day.

   Just keep in mind that the lesser amount of times you eat, the more likely you will run into vitamin and mineral sufficiency issues. Your margin of error gets increasingly smaller with less meals.

3. **Try to eat at the same time, every day.** Find the best times for you to eat and stick with those times. If you can consistently eat a meal between 12-1pm, then do it. Avoid eating two meals, at 10am and 6pm, on one day, then decide to eat 4 meals at 11am, 4pm, 7pm, and 9pm another day. Key word, TRY. Don’t stress out if you can’t keep this schedule.
4. **Try to keep the same nutrient composition at each meal, every day.** This does not mean have the same meal composition at each meal, but for a specific meal on different days. For example:

If your plan calls for 160g of protein, 60g of fat, and 100g of carbs per day (1580 kcals), your daily meal plan may look like this:

- **12pm, meal 1:** 40g protein, 15g fat, fibrous vegetables (broccoli, kale, spinach, etc.)
- **2pm, meal 2:** 40g protein, 15g fat, fibrous vegetables
- **6pm, meal 3:** 40g protein, 15g fat, 50g starches (rice, potato, etc.) and some fibrous vegetables
- **9pm, meal 4:** same as above
- **11pm:** sleep

Let's put the above numbers into example foods:

- **Meal 1:** 1 6oz container of Fage, plain Greek yogurt, 3 whole eggs, scrambled with 1 cup of broccoli, ½ mushrooms, and ½ red peppers
- **Meal 2:** Two scoops of whey protein shake, 1 tablespoon of Chia seeds, 1 tablespoon of maca root powder, 1 tablespoon of raw cacao powder, half a serving of macadamia nuts (1/8 cup)
- **Meal 3:** 8oz chicken thigh (or tofu for vegetarians), 1.5 cups of cooked white rice or 2 medium sweet potatoes, 1 cup of spinach with a teaspoon of butter
- **Meal 4:** Similar to above

The key is to try your best to keep the above meal schedule throughout the week. It’s really that simple.

5. **Plan ahead and compensate.** This is not something I recommend you do regularly. A prime example of compensating comes in the way of binge drinking. Many people will instinctively hold back on their food during the day in preparation for their booze-fest at night. While this strategy is better than adding booze on top of your current intake, it’s not something you should do all the time, particularly because I don’t recommend you binge drink all the time.

6. **If you screw up, don’t stress.** Life goes on, even if you miss a meal.
Wrap-up

As always, I approach fitness and nutrition related things with an open mind. I experiment, test, and read to make sure that what I am talking about is as accurate as I can make it. I don’t feign ignorance or arrogance if there is an answer I don’t know. With that said, seriously consider your goals and starting point.

Are you a heavily muscled and chiseled gym-rat? Then you probably won’t do well on a 2-meal a day plan and may instead need to eat north of four.

Are you a heavily fat’ed and plump couch-potato? Then you probably won’t do well on a plan designed for the hunk-o-rama above and may need to eat south of four.

See where I am going? Your eating approach is predicated on your goals, starting point, preference, and lifestyle.

Don’t let any of this confuse you. Once you know how many calories you need, how to read labels, and become familiarized with the foods you eat regularly, this is all a cinch.

As always, I value your feedback. Drop a comment if you have one or shoot me a line.

Live life strong,

David

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Farshchi HR, Taylor MA, Macdonald IA. Beneficial metabolic effects

Without question, this is the most common discussion I get into with anyone who has an inkling of interest in nutrition and taking care of their health. Trying to reverse deeply ingrained beliefs that have the support of governmental agencies and public outlets is a tough nut to crack.

In this article, I want to go briefly into why you should not believe every negative stereotype you have heard about fat, particularly saturated fat, and cholesterol. Now before we move on, let me make it clear that I am not stating fats and cholesterol are not dangerous; they absolutely can be given the right (or wrong) situation—namely genetics, existing physiological stress, and general lifestyle.

A prime example of how saturated fats and fats in general can negatively affect health is a rare genetic disorder people are born with called familial hypercholesterolemia. In this condition, people lack a gene that allows the body to get rid of LDLc from the bloodstream. Typically, these people will show normal HDL and triglyceride (TG) levels, but their LDLc levels will be through the roof, ranging from 350-1000 mg/dL (a healthy person might exhibit 100 mg/dL).
Sometimes, you can’t win against genetics

Also not surprisingly, a high-stress lifestyle puts you at an increased risk of heart disease. The reason is not because you are probably eating a bit too much fat, but because chronic stress puts your body in a state of inflammation, which in turn damages your arteries, increases your blood pressure, and forces your body to go haywire.

My point is that any food can be turned from an angel to a devil. Dietary fats, and cholesterol, have a relative health effect (RHE) on you, just like protein and carbohydrates do. But if you keep a good bill of health, the net effect is a positive one.

What is fat?

Fats, or lipids, belong to one of the three main MACROnutrients, nutrients that supply you with energy, are measured in larger quantities than vitamins and minerals, and play extremely important structural and metabolic roles in the body. Though they top the energy-supply chart by giving you 9 calories per gram, their main job is not to make you fat, but to supply you with long-term energy so you can function and continue plugging away at Facebook.

Since this is not a biochemistry crash course, I will make it as simple as possible so both you and I can understand. Last thing I want to do is confuse myself. Dietary fats are categorized into four groups that have distinct molecular properties and functions. Over the course of a couple of posts, I will go over each fat, but today, we will cover saturated fats.

1. Saturated fat (SFA)
   1. No double carbon bonds
   2. Solid at below room temperature; spreadable at room; and liquid at above
   3. Stable under high heat (cooking, baking), so makes for suitable cooking oil
   4. Several types of SFA, each with its own effects on health
   5. Since no double bonds, generally does not go rancid and as such, more stable inside the body as well
   6. SFA are required to make sex hormones (testosterone, estrogen); they make up over 70% of the cells in the body; burn in a safer and more efficient manner than glucose

2. Mono-unsaturated fat (MUFA)
   1. One double carbon bond
   2. Liquid
   3. More stable under high heat, though this depends on the type of plant the oil is from
   4. Since only one double bond, less prone to rancidity, but high heat can damage it
   5. Most make for suitable cooking oil (olive oil excluded)

3. Poly-unsaturated fat (PUFA)
   1. Two or more double bonds
   2. Liquid
   3. Unstable under high heat, though this depends on how much processing it went through during production
   4. Since it has several double bonds, very prone to rancidity and can cause oxidative damage
   5. Not a suitable cooking oil
6. PUFA are a function part of the cell membrane, giving cells its fluidity

4. Trans-fatty acids (TFA)
   1. Originally a saturated fat, but partial hydrogenation modifies the melting point and allows TFA to be solid at room temperature
   2. Products with TFA in them have longer shelf-life
   3. Stable under high heat and long storage
   4. TFA can be found naturally in foods (dairy, meats) and manufactured on a larger scale by food producers (most common source of TFA in current American diets)

Goodie, you know the four main fats. Now what? What about Saturated Fats’ effects on your health?

Based on the properties of the fats above, if you read between the lines and thought, “saturated fats” don’t seem to be so bad then my job with this article would be done. However, I am sure we all need some clarification.

Over the past fifty years, SFA has gotten a lot of bad press, mainly for its ability to increase cholesterol levels and thereby its theorized ability to increase heart disease risk. Back then, research was not as meticulous, but now we have more and better insight. Studies have been carried out in rodents and humans in randomized trials and researchers kept track of hundreds of thousands of people in cohort studies. In short, there is no good reason to believe that saturated fat is the culprit in heart disease. In fact, much of the hype in the past was not based on studies done on humans, but by speculation and... injecting rabbits with liquid cholesterol. Why do I bring this up? Because a rabbit’s natural diet does not contain cholesterol. They eat plants.

But cholesterol isn’t part of my natural diet!

For one, it’s nearly impossible to isolate one nutrient and study its overall effect on health. Even if all you ate was butter, you wouldn’t be able to measure it. Why? Because eating only butter creates a nutrient imbalance detrimental to health that is independent of saturated fat. To function at peak health, your body also needs protein and carbohydrates.

No matter how many times I state, “saturated fats do not independently increase your risk of heart disease,” it just seems to leave a blank stare on people’s faces. I don’t blame you for reacting...
the same way. For years, we have been told that saturated fats are bad for health. Most times, if you went to a doctor’s office with high cholesterol, the doctor won’t even ask you about your diet. They may ask you about exercise and what you do.

Doc: “Do you exercise?”

You: “Yes.”

Doc: “Ok.”

Ok, perhaps I should give this doctor a bit more credit.

Doc: “How much?”

You: “I go to the gym 3 times a week.”

Doc: “Ok.”

Next, they will take a quick look at your numbers, probably the LDL cholesterol (LDLc), and if they are not pointed in the right direction, will suggest you either “fix your diet” or try to hand you a prescription for a drug that has side effects. Great!

So what do your lab results mean?

According to the National Cholesterol Education Panel (NCEP), here are ‘normal’ guidelines for lipids:

- LDLc: <100 mg/dL
- HDLc: >60 mg/dL
- Total Cholesterol: <200 mg/dL
- Triglycerides (TG): <150 mg/dL

The LDLc numbers only tell some of the story. Over a decade ago, researchers found out that there are actually two types of LDLc particles—small and large. Small LDLc particles have been shown to be atherogenic—promote heart disease—because they are more likely to get stuck in holes in the arterial wall, whereas large LDLc particles are benign and less likely to get stuck (6). Now the thing to note here is that even if two people had the same concentration of LDLc in their blood, their atherogenic profile will differ. In other words, if one person had an LDLc of 100 mg/dL but it represented large particles, they would be at a reduced risk of heart disease.

Saturated fats have been unjustly vilified and LDLc alone is a poor predictor of heart disease

While I say that saturated fats have been unjustly vilified, that is not permission to go whole-hog on saturated fats. It’s true that research has focused on how saturated fats influence health and found that saturated fats are not the criminals they were thought to be, but it’s also important that you have a balanced intake of fat. According to research and observations, it’s prudent to have most of your fats come from a combination of SFA and MUFA, as this combination has been shown to improve the LDL/HDL ratio, especially in women (9).
But if you turn your attention back to how SFAs negatively affect health, you will see that this theory just does not pan out. In 2010, a meta-review was released in the American Journal of Clinical Nutrition, what dietitians consider to be the holy grail of nutrition research. Here, the study went over 21 prospective epidemiological studies that tracked over 347,000 people. What’s ironic is that one of the researchers of this study, Ronald Krauss, used to be in the anti-fat camp, until he actually looked at the literature and came to his own conclusions. They concluded:

“There is no significant evidence concluding that dietary saturated fat is associated with an increased risk of CHD (coronary heart disease) or CVD (cardiovascular disease)”

Research has also repeatedly shown that SFAs in and of themselves are not harmful to your health. To elucidate this a bit, researchers used 48,000 postmenopausal women from the Women’s Health Initiative program, one of the largest and longest running studies that observed how nutrition, exercise, and lifestyle influenced health, and put them into a modification trial where they can measure how specific parameters influence study primary outcomes. In this case, if decreasing saturated fat over time would decrease CVD risk. Over an average of 8.1 years, total fat intake decreased by 8% and saturated fat by 3%, while consumption of fruits, vegetables, and grains increased. Here is what they had to conclude:

“Over a mean of 8.1 years, a dietary intervention that reduced total fat intake and increased intakes of vegetables, fruits, and grains did not significantly reduce the risk of CHD, stroke, or CVD in postmenopausal women and achieved only modest effects on CVD risk factors”

Ok, “but what about the more specific stuff that saturated fat does, like how experts say that since SFAs increase cholesterol, they also increase your risk of heart disease”?

The above general statement is almost false. SFAs have different chain lengths, and each impart a different effect on health, so to say a blanket statement like above does not take into account the various properties of SFAs. In fact, most of the SFAs have a neutral effect on health, with a few having a positive effect while one having a negative one. SFAs, while they do increase LDL cholesterol, also increase HDL cholesterol, thereby not changing the ratio of total cholesterol to HDL cholesterol, a strong predictor of heart disease risk. Additionally, SFA are the strongest at lowering TG levels. From the abstract:

“Lauric acid greatly increased total cholesterol, but much of its effect was on HDL cholesterol. Consequently, oils rich in lauric acid decreased the ratio of total to HDL cholesterol. Myristic and palmitic acids had little effect on the ratio, and stearic acid reduced the ratio slightly. Replacing fats with carbohydrates increased fasting triacylglycerol concentrations.”

Above I mentioned that replacing SFA with MUFA improved
LDL/HDL ratios, but it seems that improving, or lowering, your Total Cholesterol/HDL ratio is even better. Also, that last bit is interesting, right? Basically it’s saying that eating carbohydrates instead of fats will increase fasting levels of triglycerides, an independent risk factor for heart disease in both men and women. Another time, another place.

The feverish chase of linking SFA with heart disease has slowed down quite a bit, and I think it’s probably because people have finally come to the realization that not only is it unfair to ostracize SFA, but also because SFAs don’t independently increase the risk of heart disease. As of this writing, not much more literature on saturated fat and health has been published. Nonetheless, studies continue. One of the few more recent ones I could find was this bit, again from the Journal of Clinical Nutrition. They concluded:

“The effect of diet on a single biomarker is insufficient evidence to assess CHD risk. The combination of multiple biomarkers and the use of clinical endpoints could help substantiate the effects on CHD. Furthermore, the effect of particular foods on CHD cannot be predicted solely by their content of total SFAs because individual SFAs may have different cardiovascular effects and major SFA food sources contain other constituents that could influence CHD risk” (4).

This is Harvard’s way of saying, “we should not implicate only saturated fats as a cause for heart disease, but a variety of factors, including smoking, exercise, genetics, and general dietary habits”. The second one was from the Journal of Clinical Lipidology. Their conclusion was much in line with the above, but there was even more skepticism about the negative health effects of SFA and the beneficial health effects of even MUFA and PUFA.

“High-density lipoprotein (HDL)-C increases with SFA intake... among individuals who are insulin resistant, a low-fat, high-carbohydrate diet typically has an adverse effect on lipid profiles (in addition to decreasing HDL-C, it also increases triglyceride and LDL particle concentrations). Consequently, a moderate fat diet in which unsaturated fatty acids replace SFAs and carbohydrates are not augmented is advised to lower LDL-C”. (5).

The above conclusion should be a bit of a head-scratcher. Why would they advise that people replace SFA with MUFA to decrease LDL when, just a couple lines before, they clearly stated that SFA increases HDL? Based on this, it is prudent to have a good combination of SFA and MUFA, but not to be scared of SFA in the absence of a high carbohydrate diet. More importantly, two of the authors of the above study, Drs. Walter Willet and Alice Lichtenstein, were initially anti-fat and believed SFA to be a culprit in heart disease. Again, I think it is extremely liberating that researchers who once advised against SFA intake are beginning to question their original theories and even do an about-face.

And a review done in 2013 showed that full-fat dairy products had this to conclude:
“The observational evidence does not support the hypothesis that dairy fat or high-fat dairy foods contribute to obesity or cardiometabolic risk, and suggests that high-fat dairy consumption within typical dietary patterns is inversely associated with obesity risk” (10).

Of course, we can’t just accept wholeheartedly that SFA cause no damage. As I mentioned before, they can. But the science is stacking up in favor of exonerating SFA. There is no cold-hard truth, but there hardly ever is in science. If there was, scientists would be out of a job and there would be no more need for ongoing research.

“By the way, I like cheese, yogurt, and butter. What about them?”

Dairy products make up a group of foods that have the highest concentration of saturated fats, collectively. One serving of Camembert cheese has 7g of fat, 4 of it being saturated. One 7 ounce serving of full-fat Greek yogurt has 10-12g of fat, 8 of it being saturated. And one tablespoon of butter has 12g of fat, 8 of it being saturated. They also taste a whole lot better than their chalky non-fat counterparts.

So where am I going with this? In addition to the last study I quoted above, there’s more good news for those of you who like full-fat dairy goodness: a most recent study published online in August 2014 showed that two full servings of full-fat Camembert cheese or yogurt per day over the course of 8 weeks had no negative impact on people with elevated cholesterol and taking no medications (7). This study is followed nicely in the footsteps of a study done earlier in 2014 showing that full-fat dairy reduced the risk or prevented cardiometabolic disorders, even in randomized trials (11).

But this is not news. Studies dating back to the early 2000’s show full-fat dairy products improve health and weight-loss. Whereas cheese improves LDLc more than butter, butter improves HDLc more than any other dairy product (8).

What about eggs?

Ah, the venerable, honorable, and revered egg. There’s nothing quite like it. Indeed, nothing quite like eating nature’s perfect food that comes out of an… anus? Ok, technically, it’s not the anus but a ‘cloaca’. But enough of the technicalities.

Eggs are always a hot topic. Though they are not as high in
concentration of saturated fats, they do concern most people when it comes to cholesterol levels. Egg yolks contain nearly all of the nutrition of the egg. It is one of the few natural sources of choline, contains magnesium, vitamin A, and a range of B-vitamins. In essence, whole eggs are one of nature’s perfect food.

In research, there is an ongoing tug-o-war when it comes to egg consumption. On one hand, eggs have been shown to increase HDL levels and converting LDLc into the large particle sizes (12). The mentioned study, done in 2006, showed that eating four eggs per day benefited health in the general population. More studies done later, like these 2010 and 2013 ones, showed that eating three eggs per day improved LDLC and HDL profiles while simultaneously increasing blood antioxidant status, especially during a lower carbohydrate diet (13, 14).

On the other hand, research has shown that eating more than one egg per day has no impact on cardiovascular risk, but may pose a risk to those with type 2 diabetes. At the same time as increasing the risk of heart disease to those with type 2, egg consumption decreases the risk of stroke. Some of these studies were done using egg questionnaires that ask participants to estimate how many eggs they eat per day, over the course of years (15). Can you remember how many eggs you ate last year? Interestingly enough, the study done in 2013 showing beneficial effects touched on how egg consumption can benefit type 2 diabetes.

“As Daily intake of 3 whole eggs, as part of a CRD [carbohydrate restricted diet], increased both plasma and lipoprotein lutein and zeaxanthin [antioxidants]. Egg yolk may represent an important food source to improve plasma carotenoid status in a population at high risk for cardiovascular disease and type 2 diabetes (14).”

As you can see, the research is not as clear-cut on egg consumption. But by combining both observation and research, I have come to conclusion. Whole egg consumption does not increase your risk for heart disease. In fact, previous clients not only noticed beneficial effects on cholesterol, but also on weight status, blood pressure, and blood sugar control.

Wrap up and we’re not talking about a Big Mac to go

The best way to improve your cardiovascular disease risk and general health seen through lipid test results is to not only decrease and optimize your LDLC, but also to decrease TG. When you turn both of these numbers for the better, your HDLC will naturally go up. How do you achieve these feats? Eat less refined carbohydrates and more SFA and MUFA.

Again, this article’s purpose is not to get you to eat more saturated fat, although it’s definitely not deterring you so. If your preference is to stay away from saturated fat, that’s your decision. The goal of this article is to enlighten you, stating that there’s no reason to be scared of saturated fat in the presence of a whole foods diet. If you’re eating a Standard American Diet that consists of Oscar-Meyer bacon, cheese so processed it can only be called ‘cheez’, and freezer-burned
French fries, then adding saturated fat will do more harm than good. But let's make it known that it's not the saturated fat that's doing the damage, it's the diet.

Can you see yourself having good health after eating like this?

Perhaps you want to start replacing your rancid and unhealthy polyunsaturated fats—cottonseed, peanut, canola, corn, soybean, safflower, and sunflower—with saturated fats and reap the benefits. Here are some sources. Take note how these sources are also whole foods that taste good, unlike the PUFAs that we are all commonly told to consume.

- Egg yolks
- Fattier cuts of animal meat
- Greek yogurt, kefir, cottage cheese, milk (not a huge fan of milk for reasons outside the scope of this article), cheese
- Coconut products (especially extra virgin coconut oil)
- Grass-fed, organic cow, goat, sheep butter
- Beef tallow and pork lard (though the fatty acid composition of these two are highly dependent on how the animals were raised)

And in case you are wondering...

I will include my n=1. I try to refrain from doing this too much because I apparently lack age. And many people will be quick to point out that, "I am young and active" and that I "will soon see the negative effects of eating the way I do".

Except, I won’t. Stop to take a look at all of the sick and obese teenagers. More than 60% of these kids will develop type 2 diabetes later in life and will probably die of heart disease; but not before going blind or losing their hands and feet. I am 28, so unless I come down with an unavoidable genetic disorder, chances are extremely low that I will succumb to heart disease based on the research and my lab results.

I have a family history of high cholesterol, high blood pressure, peptic ulcers, and stroke. Both of my grandfathers died in their early 60’s of a stroke, my aunt had half of her stomach resected, and my mother is currently on blood pressure, cholesterol, ulcer, and arthritis meds. The most ironic thing about my mother’s diet is that she eats hardly any saturated fats yet has high cholesterol. She doesn’t drink, smoke, doesn’t even work part-time, but she is currently eating the very same “heart healthy” vegetable oils peddled by our government agencies. If only she would listen to what I say to her.

My diet mainly consists of whole fat Greek yogurt, kefir, grass-fed butter, coconut oil, chicken thighs, salmon, beef stew, whole eggs, loads of vegetables, and berries. I eat most of my calories at night, especially my carbohydrates, I fast 12-hours a day, and I exercise three times a week. Much less than your normal gym-rat who believes fat and cholesterol are bad for you. So my last blood work showed some peculiar yet predictable results.

Total cholesterol: 179
LDL: 101  
HDL: 67  
TG: 60  
Fasting blood sugar: 90 mg/dL

Not too bad coming from a person born into a sick family.

**Your main takeaway from this article is this:**

Unless you have a genetic disorder or just flat out don’t like saturated fats, there’s no need to fear saturated fats. Like proteins and carbohydrates, they have an RHE, which can either be made better or worse depending on your circumstances. In the presence of a high carbohydrate diet, especially one composed of refined carbohydrates, SFA can do damage. But in the absence of a high carbohydrate diet, SFA not only improve HDL, triglyceride, and blood sugar levels, but they also provide you with a clean burning energy source.

As always, I appreciate your feedback.

Live life strong.

David

**References**

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I got a question from a client the other day: how would I classify my dieting?

First off, I don’t truly believe in the words ‘diet’ or ‘dieting’ in the way that they are used and perceived these days. I believe in an eating lifestyle, an approach that requires you to make behavioral and lifestyle changes to see results for a very long time. Sometimes this lifestyle calls for a ‘plan’ that you use to achieve a certain goal. Sometimes, you have no plan at all and just eat whatever the hell you want. Using this same logic, a ‘diet’ could cause someone to not only lose weight, but also to gain weight. But in our society, people are so wrapped up in the idea that a diet is used to lose weight that they lose sight of the multitude of other effects diets have on health. Hence, I prefer not to use a term that has a social stigma attached to it.

Asides from what I call my ‘dieting’ philosophy, I generally use the ‘If It Fits Your Macros’, or IIFYM, principles. In fact, this isn’t my dieting philosophy at all. I didn’t create it, nor did I help to. I chose to go this
route because I feel it provides the most ‘flexibility’ when it comes to food choices. Extremely reputable people like Alan Aragon, Layne Norton, and Eric Helms spear-heading it helps, too.

So, what is IIFYM?

Essentially, you establish, track and try to eat your macronutrient, or macro, goals. Your macronutrients are the food nutrients that are measured in grams and used for energy—fats, protein, carbohydrates. Like any other eating plan, it does require making sure you are eating within the parameters of your goals, but it allows ‘flexibility’ in that it does not condone you for eating junk, so long as you don’t exceed your fat, protein, or carbohydrate daily targets. In so many words, you can substitute macronutrients for macronutrients.

This type of eating plan does not dictate that you stay ‘clean’ (whatever the hell that means) 6 days out of the week and then cheat at the end (although this is a plan that works well for many people). If you have intense chocolate cravings at 3PM, why wait? Just eat it and adjust your following meals accordingly (of course this isn’t optimal).

‘But if I don’t eat clean, what do I eat?’ See the picture above. You don’t need to live on chicken cutlets, steamed broccoli, and brown rice.

Anything you can eat and break down for energy—doughnuts included—contains fats, protein, and/or carbohydrates. A doughnut will have carbohydrates (sugar), fat, and some protein. Therefore, if you want a doughnut, you will eat a doughnut, but ensure that it replaces, not adds, to what you would normally eat. If a doughnut has 50g of carbohydrates and you planned on eating a 1/2 cup of rice, then you would eat a doughnut and not rice. Simple, right?

Why do I feel this is effective? Because for long-term results, moderation and motivation are key. I am willing to stake my life on the theory that more people will adhere to eating plans better if they are allowed a little bit of junk on a consistent basis rather than a lot of junk on a seldom basis. Why do I think this? Because my clients tell
me so. As a trainer, I work with people of varying backgrounds. They are businessmen, or women, photographers, bankers, or housewives. Many of them simply cannot stay 'clean' until the weekend because of business functions. But as long as they know how to read food labels (and you should, more on that later), they are in safe waters.

At first, understanding and undertaking IIFYM may seem intimidating. What foods contain what? How do I calculate the rest of my macros if I eat this raspberry truffle? Is it OK if I add 1/2 teaspoon extra of olive oil? By the way, 1/2 teaspoon of olive oil won't make a lick of difference. But keep practicing and it becomes mechanical, like driving, and you will only reap the benefits: freedom.

With that out of the way, let’s get into how to break down IIFYM into what you readers really want to see: numbers and guidelines. Before we move on, you should know that the protein and fat numbers are based on target bodyweight, or what you want to weight in 3-6 months.

**Protein:** I generally like to start clients at 1.0g per pound of target bodyweight, unless they are severely overweight.

**Fats:** I generally set this at 0.4-0.5g per pound of target bodyweight.

**Carbohydrates:** This depends on a client’s goal. However, I generally do not dip below a client’s amount of **lean body mass (LBM)**, or total body weight minus fat mass. For example, if you are 180 pounds and know that you have 20% bodyfat, then you make this calculation: 180 * .20 = 36 → 180 – 36 = **144 pounds of lean body mass**. On any given eating plan, you will not go below 144g of carbohydrates per day. What if you don’t know your LBM? Then I suggest starting your carbohydrates at **150g**.

For **fat-loss:** I generally prescribe clients to eat enough carbohydrates to cover their LBM in grams or 1.25 of it per day.

For **muscle-gain:** I generally prescribe clients to eat enough carbohydrates to cover 2.0 times their LBM per day.

Let’s use the above hypothetical trainee who weighs 180 pounds, carries 20% body fat, and wants to lose 10 pounds.

**Protein:** 170g per day, spread out evenly over meals

**Fat:** 85g per day

**Carbohydrates:** at least 144-180g per day
Like with any other eating plan, monitor your progress. After two weeks, if you do not see the scale move, then nudge calories in the appropriate direction.

Wrapping up, I feel that IIFYM is an optimal way to structure your eating plan. It provides you the reprieve of going ‘out of bounds’ without feeling guilty, but also allows you maintain a sustainable lifestyle. After all, research shows that over 90% of dieters cannot maintain their efforts after two years. What good is dieting if everything you have done falls apart after two years? Worse yet, those dieters who revert back re-gained all of their weight and then some.

If you have any questions, don’t hesitate to ask.
Why Grass-fed Meat Is Beneficial for Your Health and The Environment. by Clay Miller. Category Archives: Nutrition. Feline digestive physiology and nutritional needs, with a focus on the science behind it, especially of species appropriate diets. Post navigation. ← Older posts. Dr. Karen Becker Interview: The Fresh Food That More and More Cat Behaviorists Recommend. CatCentric Posted on March 12, 2018 by Tracy Dion October 8, 2018. I haven't posted anything lately, as I've been spending more time working other CatCentric projects, but I have such exciting news to share. Category Archives: Nutrition. Special Guest: Amber Pierce – Ask a Cycling Coach 193. Amber Pierce has more than ten years of experience in the pro women's peloton and more than 60 race wins across 5 continents. She's incredibly knowledgeable regarding performance, human physiology, and women's specific issues within the sport of cycling, and we are excited to have her as our special guest! January 18, 2019 | Jonathan Lee | 2 comments. Leadville Deep Dive with Pro Rider Alex Grant – Ask a Cycling Coach 169.